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THE
EVOLUTION OF MAN
AND
HIS MIND.

A HISTORY AND DISCUSSION OF THE EVOLUTION AND
RELATION OF THE MIND AND BODY OF
MAN AND ANIMALS.

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PREFACE.

While a civil engineer and government surveyor of public lands the author became familiar with the workings of the land and Indian bureaus of the interior department in Washington, D. C., and incidentally the other offices of general, state and territorial control, and realizing the impossibility of doing conscientious work while associated with the politicians who filled most of the places, in 1873 the field of medicine was substituted, and after graduation a specialty was made of nervous and mental disease. In order to further such studies the author secured a position as pathologist to the Chicago County Insane Asylum, and during three years' service there and later as superintendent of the Illinois Eastern Hospital for the Insane he discovered that the politics controlling such places was inexpressibly worse than what he found elsewhere. As reform endeavors availed nothing, a determination was made to discover the reasons for the too frequent brutalities in public charity institutions, and the apathy of citizens concerning them. The studies expanded into this volume, passing far beyond their original bounds, but rigidly confined to this world, with only incidental mention of anything beyond; though by inference the earth is but a small portion of the universe.

Hallam, in the preface to his *Literature of Europe*, remarks that: "An author who waits till all requisite materials are accumulated to his hands is but watching the stream that will run on forever and though I am fully sensible that I could have much improved what is now offered to the public by keeping it back

for a longer time, I should but then have had to lament the impossibility of exhausting my subject."

The author finds encouragement in thinking with Carlyle, that: "If a book come from the heart it will contrive to reach other hearts. All art and author-craft are of small account to this."

70 State St., Chicago, February, 1903.

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THE EVOLUTION OF MAN AND HIS MIND.

CHAPTER I.

EARLIEST MEN.

You will sometimes hear old folks express a wish for a return of the "good old days" of their youth. This disposition of old people to regard recent times as inferior to remote periods is recorded as universal and as a senile characteristic as far back as we can go in history. A little reflection shows that modern times are better than the ancient.

Recently there were no electric or gas lights, no electric cars or telephones, horses pulled the street cars. There were no typewriters, bicycles or automobiles, no ice-machines, no modern battle-ships, when wooden "men-of-war" moved with sails. When the nineteenth century opened there were no steam-cars or steamships. Candles dimly lighted houses and churches that were poorly heated in winter; there were no postage stamps, steel pens, friction matches, sewing machines, photographs, city sewerage, hard coal fires, and machinery of all sorts was very simple, while fruits, vegetables or meats were not canned.

But the nineteenth century was progressive beyond preceding times, and progress is one of the forms of evolution, the evidences of which are all about us. Today in the world's history we have telegraphs, railways, steamships. Voyages at sea are now made in a few days where formerly sailing vessels used many weeks to go the same distance. We have the daily newspaper and engravings so cheap as to be within the means of the poor.

Yesterday, so to speak, there were none of these things. Horses pulled clumsy stage coaches through muddy roads, printed books were unknown. Fulton and Watts had not thought out their primitive engines. Step by step the conveniences of to day were evolved by gradual, toilsome improvements upon past things and methods.

Half a thousand years ago America was unknown to Europeans, unless the Vikings knew of it. London, Edinburg, Paris were unpaved, torch-lighted; their streets were infested with robbers and assassins. And yet back of this time was a state of things still worse. A thousand years ago mercenary armies swarmed over Europe, while feudal predatory man was in disposition much like the sharks, crocodiles and tigers of the seas, rivers and jungles. It is difficult to imagine a period when we had no compass, engines, telescopes, barometers, thermometers, sciences of any sort, no gunpowder or firearms, or even soap and towels; a time when no one knew how to read or write, for there was no alphabet. Long-haired and bearded pirates skirted the shores with their rude war-vessels, Vandals, Goths and Huns overran the continents and islands, armed with bows and spears. Still another step and man was a naked savage with the rudest of tools and weapons. And far enough back in the world's making there were no men or other animals, and even plants had a beginning.

A rough general statement of an early period of the earth's condition pictures a hot sea covering the globe, and, as the earth cooled and contracted, wrinkles in the shape of mountain chains thrust peaks miles above the sea surface, some of which made islands, while longer ranges skirted basins which later filled in by the washing down of the high mountains or rose from the sea as continents. Modern maps show coast-range rims to the larger bodies of land. The vapor from the hot sea at the base of the ranges rose high in the air and becoming condensed fell as rain and snow upon the peaks, packing into glaciers which during ages of gradual movement downward, together with the action of fierce storms and torrents from the melting ice, washed the mountain elevations down into the sea and formed the adjoining plains, though some of these expanses may also have risen from the ocean or have been created by the falling of the sea level. It is conceivable that at one time all there was of Europe, Asia, America and Africa consisted in such mountain chains, vastly higher than what remains of them, rising above the universal hot ocean. Between the sea level and highest elevations there were all the temperatures to be found between the tropics

and the poles, and marine forms could find space and conditions favorable to evolution into the highest of land and air types in numberless such regions without recourse to migrations from long distances, though at later epochs such intermixtures occurred. My special contention is the sufficiency of many local environments to have developed species of many kinds within isolated regions and that all the different races of men have not sprung from a single source.

James Geikie¹ enumerates, in his chapter on the glacial succession in Europe, separate periods:

I. Preglacial Times. Genial climatic conditions indicated during the older pliocene system. The sea was over the east and south of England, in Belgium, Holland, northern and western France and the coast lands of the Mediterranean. The luxuriant plants of the land and the great mammals of the pliocene retreated gradually before the approaching winter of the glacial period, equatorial sea forms also retreated south and were replaced by arctic plants and animals.

II. First glacial epoch. A thoroughly arctic fauna lived in the North Sea, great snow fields came into existence and a gigantic glacier occupied the basin of the Baltic. The mountains of Britain were ice clad as were the Alps. In central France large glaciers descended from the volcanic cones of Auvergne and Coutal, and deployed upon the plateaux, and probably in many other districts similar conditions existed.

III. First interglacial epoch. The cold passed away, the arctic fauna retreated from the North Sea and dry land occupied the southern part of that sea up to the latitude of Norfolk at least. Across this new-formed land flowed the Rhine and other rivers. A temperate flora with hippopotami, elephants, deer and other mammals filled Europe and England. A luxuriant deciduous flora was in the Alps at heights it now no longer attains, with elephants, and this filled a long period.

IV. Second glacial epoch. The greatest of European ice sheets appeared covering all the northern part of the continent and flowed south into Saxony. The Alp glaciers reached their

¹ The Great Ice Age, p. 607.

greatest extension and in other mountains of Europe snow fields and glaciers made their appearance. Arctic alpine plants came to occupy the low grounds of central Europe and northern annual plants ranged down to the shores of the Mediterranean.

V. Second interglacial epoch. Prolonged duration of the previous stage attested by moraines and then the climate became genial, northern flora retreated north and southern flora came north and southern mammals came up again. Then the climate deteriorated and the flora and fauna migrated again as the third glacial epoch approached. Much low lying land in northwestern and northern Europe was submerged. This interglacial period was of long duration.

VI. Third glacial epoch. At the climax of this epoch a most extensive ice sheet again overwhelmed the major portion of the British isles and a vast area of the continent, but it did not attain the dimensions of its predecessor. From the Alps great glaciers again descended to the low grounds, where they dropped the terminal moraines of the inner zone.

VII. Third interglacial epoch. After the disappearance of glacial conditions the Baltic became tenanted by a temperate North Sea fauna while the adjacent lands supported a corresponding terrestrial fauna and flora.

VIII. Fourth glacial epoch. In the early stages of this epoch the low grounds of Scotland were submerged to the extent of a hundred feet at least, while an arctic marine fauna lived around the coasts.

Eventually the various mountain districts were cased in ice and snow, large glaciers filled the highland fiords and sent icebergs to the sea, implying a snow line of 1,000 or 1,600 feet in elevation. But the greatest ice was Baltic, an ice sheet covered Scandinavia and Finland, and an ice stream flowed from the Baltic basin to North Germany and Denmark; later the ice sheet melted, a wide area of Scandinavia was submerged in a cold sea which communicated widely with the Baltic. In the Alps smaller glaciers than previously appeared and local glaciers were in the valleys of some of the mountain ranges of middle Europe.

IX. Fourth interglacial epoch. The British isles were part of the continent, the cold sea retreated from Scandinavia but the

Baltic became a lake, but later submergence again came, and the sea was filled with a more glacial climate fauna than at present.

X. Fifth glacial epoch. Moraines indicate a snow line of 2,500 feet in the British isles and submerged Scottish coast islands to 50 feet below the present level.

XI. Fifth interglacial epoch. Land re-emerged and valley glaciers retreated. Northwest Europe drier and forest growths were abundant.

XII. Sixth glacial epoch. Snow line at 3,500 feet in Scotland and limited submergence of Scotland 20 or 30 feet. Forests decayed and peat bogs extended their area.

XIII. The present time in Britain is marked by the modern sea-level and return of a milder and drier condition and final disappearance of permanent snowfields.

Professor Frankland² says that a satisfactory theory must take cognizance of the following points in the history of the glacial period:

1. That its effects were felt over the entire globe.
2. That it occurred, or at least terminated, at a geologically recent period.
3. That it was preceded by a period of indefinite duration in which glacial action was altogether wanting or was confined to regions of considerable altitude.
4. That during its continuance atmospheric precipitation was much greater, and at one period the height of the snow line was considerably less than at present.
5. That it was followed by a period extending to the present time, when glacial action became again insignificant.

In order to secure a sufficient supply of ice to constitute a glacial epoch we must, in the first place, have an adequate amount of aqueous vapor in the atmosphere, and this could only arise from heated waters of the ocean, and Frankland concludes that a sole cause of the glacial epoch was a higher temperature of the ocean than that obtaining at present. 1. That a higher oceanic temperature would give rise to an increased evaporation and consequently to an augmented atmospheric precipitation. 2. That this increased atmospheric precipitation would augment the

² Philosophical Magazine, May, 1864, Quoted by Sir H. H. Howarth, Glacial Nightmare, Vol. 2, p. 33.

average depth of permanent snow upon the ice bearers and would within certain limits depress the snow line.

James Croll³ claims that Frankland was wrong in trying to account for phenomena of glacial action by terrestrial heat, as the glacial sea was cold and not hot. Of course it was, in the vicinity of the bergs, but while the lofty mountains made the glaciers the hot sea melted them. Dawson's fossil objections to Frankland's idea are also met by great heat and intermediate temperatures all the way to great cold to account for the fossils found. Frankland's hypothesis covers all the conditions and does away with the need of twisting the earth out of its position to account for only a portion of the facts while ignoring such as bear against so forced a conclusion. Howarth⁴ admits that we should have traces of an arctic fauna and flora in the surface beds of the tropics, but they nowhere occur, and there is an absence of typical North American plants in the highlands of the West Indies and the Andes of the equator.

Taking Geikie's epochs, *seriatim*, Frankland's hot earth and sea explain them thus: I. The snow line was high with a temperate region on the mountain sides above the hot sea, but as the sea grew less hot the snow and ice line came lower and animals and plants moved southward. II. The receding of the sea would account for the ice advance, the land appearing by elevation from the sea with denudation of the hills as the earth shrank and piled up and filled in plains which became colder through distance from the hot sea. III. Mountains gradually denuded forming new lands in Europe with melting of glaciers toward the north and up the mountains. IV. Ice sheet over Europe and sea less hot and farther south while northern animals ranged down to the Mediterranean. V. Glaciers gradually melted by southern sun and terrestrial heat with temperate climate and later much land in upper Europe submerged by melting ice. VI. Another ice sheet covered Europe, but it was not so extensive as the first one. VII. Baltic and adjacent land filled with temperate fauna. VIII. Submergences from melting ice. Snow line 1,000 to 1,600 feet. IX. Temperate, warmer than at present, but sea not hot. X.

³ *Climate and Cosmology*, 1886.

⁴ *Glacial Nightmare*, p. 492.

Snow line 2,500 feet, so it was higher than in the preceding glacial epoch. Scottish coast lands under 50 feet of water, so the sea was less deep. XI. Land re-emerged and forests grew and valley glaciers retreated. XII. Snow line 3,500 feet in Scotland and land under 20 or 30 feet of water, forests decayed. XIII. The present, with snow fields retreated northward.

James Croll, of H. M. geological survey of Scotland⁵ gives a theory of the secular changes of the earth's climate and quotes Morlot on two glacial periods separated by an intermediate one in which the ice that covered the greater part of Europe disappeared even in the principal valleys of the Alps to a height of 4,400 feet above the present level of the sea. Morlot thinks there may have been a cosmical cause: "Wild as it may have appeared when first started the idea of general and periodical eras of refrigeration for our planet connected perhaps with some cosmic agency may eventually prove correct."⁶

Croll⁷ speaks of evidences of warm periods in the arctic region, fir trees having existed in latitude 74° 48', he cites from Sir William Hooper's report that the *Pinus alba* examined by him from the arctic regions consisted of alternate zones of narrow and broad growth as though the climate was hotter part of the year than at another. Probably the terrestrial heat with the solar was the most exuberant stage and corresponded to the summer, and the lesser heat afforded by the hot sea and ground alone for the balance of the year accounted for the smaller zone. Arctic regions were warm during the Permian period and there is a close resemblance of the Permian flora to that of the Carboniferous, pointing to a former prevalence of a warm and equable climate, and a warm sea must have been in high latitudes from the magnesium limestone there.

Frankland's hypothesis explains the stages Croll adopts: First mountains with glacial peaks and hot sea base in the polar regions and snow line high at the equator because of combined sun and earth heat. Second, formation of plains and subsidence of sea with less terrestrial heat than formerly but sufficient to

⁵ Climate and Time in Their Geological Relations.

⁶ Edinburg New Philos. Jour. Vol. II., p. 28.

⁷ Ibid., p. 261.

produce luxuriant vegetation and develop animals abundantly. The mountains lowering by washings with a corresponding rise of the glacial and snow eminences. Third, cooling of the earth and lowering of mountains by water and ice action could bring the ice sheets and glaciers farther south toward the Ohio and Mediterranean as they melt. Fourth, when the final melting took place the present epoch arrived.

Snow would lie higher up on mountains at the equator owing to the united effect of the perpendicular sun and the heat of the earth and sea, in ages before the earth was cooler. Proper regard for Frankland's idea would explain away the apparent inconsistency of the ice line going higher up the mountain as the earth cooled. The sea being less hot there would be vastly less vapor to condense, and not so much snow would fall, and as what was melted was not replaced the singular result would be that while great heat made deeper snow less heat brought less snow, and as the earth grew cooler the snow peaks went higher.

Dana^s gives the relative lengths of geological ages in their time ratios based on the maximum thicknesses of the rock formations and the rate of sedimentation and erosion. The whole duration of geological time he places at 200,000,000 years; deducting for the Archean the rest of the time would be 130 million years. Reade gives 95 million, Walcott 70 million, Hutchison 600 million, McGee 6,000 million, and Kelvin 100 million. Dana sums up the results of speculation as between ten million and six thousand million years. The relative duration of the Cambrian and Silurian, the Devonian and Carboniferous correspond to the ratio of $4\frac{1}{2}$ to 1:1, or perhaps 4:1:1, and for the Paleozoic, Meozoic and Cenozoic 12:3:1. Since the glacial, Lyell, 31,000 years, Spencer 32,000 years. Reptiles appeared first in the Permian but their age was the Meozoic. Mammals began then but their age was the Cenozoic. So man came in the Quaternary and possibly in the Tertiary, while the present is his age.

The Appalachian west of the Blue Range was the marginal bottom of the interior Paleozoic sea. During the Carboniferous it was sometimes above or below the sea. The Sierra was the

^sManual of Geology, p. 1023.

first born of the Cordilleran Range, the marginal bottom line of the Pacific. The Alps during the Mesozoic and early Tertiary was the marginal sea bottom. At the end of the Eocene these were crushed together and folded upward. The Himalayas were similarly constructed.

A. H. Keane⁹ regards the Tertiary as occupying 3 per cent of time; the Eocene with its mammals 1,250,000 years; the Miocene with higher apes 1,000,000 years; the Pliocene with man-like apes 850,000 years. Many geologists now believe the ice age Pleistocene of the Quaternary or Post Tertiary was more probably coincident with elevation rather than subsidence. The arctic and tropic fauna were mixed and men-like apes were already spread over the dry land of most of the world with palæolithic man. The approximate beginning of the strictly Pleistocene or Quaternary times was 600,000 years ago, and the duration was about 530,000 years. The Post Pliocene or pre-historic time of neolithic man was scarcely less than 60,000 years and probably more largely coincides with the general disappearance of ice and appearance of men of the new stone age.

The historic or present age has been stated as proven to be 10,000 years and archæological prospects promise to push this length of time much further backward.

Joseph Le Conte¹⁰ in an article on Critical Periods in the History of the Earth says:

"Great and comparatively rapid changes in organic forms are produced in the following ways: 1. The changes in physical geography open gateways and permit migrations in many directions. 2. The changes in climate compel migrations mainly north and south. 3. These migrations in their turn precipitate different faunas and floras upon one another, producing severe struggles between invaders and natives, and therefore the destruction of many forms of both, and large modifications of the survivors. 4. The foreign invasion compels many natives in their turn to migrate and so the wave of invasion, of severer struggle and of consequent changes is propagated as far as physical conditions will allow migration. The effect of all this must

⁹ Ethnology, 1896, Ch. IV., Antiquity of Man.

¹⁰ Univ. of Cal. Bulletin of Dept. of Geology, Aug., 1895.

be a more rapid evolution of organic forms as the result (a) of a new environment and (b) of a severer struggle for life. The more rapid rate of evolution and especially new opportunities give rise to higher dominant classes. These higher dominant classes again in turn determine changes in lower forms, especially their immediate rivals, and these changes are again propagated downward through the whole organic kingdom and compel a new adjustment of the whole on a different basis."

Le Conte further holds that "the great theater of physical changes, of extensive migrations and of severe struggle and therefore of rapid evolution, especially of higher forms, and therefore also the place of first appearance of dominant classes has undoubtedly been what Huxley calls *Arctogæa*, i. e., those parts of North America and Eurasia that are north of the Himalayas and Sahara, or all the northern hemisphere north of Central America, Sahara and the Himalayas. This, the greatest body of contiguous land, has in later geological times been sometimes divided and sometimes united. It has been subject to the greatest changes, the widest migrations, the severest conflicts, and therefore the most rapid evolution of dominant forms. But these dominant forms have from time to time as opportunity offered invaded more southern lands and always as conquerers."

In the Miocene and early Pliocene the climate of Greenland was like what we find in Cuba today. There were monkeys, elephants and other tropical animals, but as the earth cooled and the ice covered these regions animal and vegetable life changed to that of the present kind. Immediately before, during or immediately after the glacial period man first appeared in the earth, at least it is in the strata of this time that we find the first traces of his presence. Man can live and thrive in a range of 200 degrees temperature and in valleys far below sea level, like that of the Dead Sea, and on table lands and mountains 15,000 to 20,000 feet above the sea, where even the cat perishes. Some are exclusively vegetarian while others eat nothing but animal food. Patagonians go naked in a cold climate and some people in the tropics are constantly clothed. Man lives in arid deserts and in north-east India where the rain fall is 300 inches annually. Man is stronger than his surroundings, he adapts himself to them or

they adapt themselves to him, an instance of the former being seen in the Eskimo being cheerful, garrulous and inventive amidst his gloomy surroundings. The rare air of high regions expands the chest, and tribes on the highlands of Peru and Bolivia, at 10,000 feet, have long bodies, broad chests and short legs. Limits of height are placed at 6 feet 4 inches for Polyne-sians, 6 feet for Kaffirs, 5 feet $\frac{1}{2}$ inch for Asiatic Malays, and 56.7 inches for Bushmen. Puberty in the tropics is three years earlier than elsewhere. Slant eyes are not peculiar alone to Mongolians and not even extensive among them. D'Obigny found a tribe in South America with such eyes. The steatopagy or large rumps of the Hottentot women persisted through sexual selection, and some of the women are unable to rise when seated without help.

Races differ in anatomy, physiology, location, language, customs, mental processes and even in their parasites. Brunettes have more odor than blondes, the Semitic more than the Aryans and negroes most of all. Blonde invaders of ancient times came by sea and land but always from the north.

At first men are naturally hunters, warlike and cruel, requiring a wide range of space for seeking game, then they became pastoral, but as they must move their herds from one pasture to another they are likely to become nomadic, and having to defend their flocks they are alert and aggressive. When they settle down to agriculture their manners soften, the slaves they have made from prisoners of war become serfs and in such ways civilization develops from unpromising beginnings. Early men were disorderly, uncleanly, uncouth and rough, loving turmoil and pillage, with low grade intelligence, their immature minds slowly rising to the possibility of making a fire by rubbing two sticks together, and it is not so long ago when our grand parents used tinder boxes in which were kept flint, steel and tow with which fires were lighted.

The long arms and short legs of the man-like apes are due to living in trees and using the hands for climbing, the feet being turned inward to grasp the tree, and when children have weak ankles with turned-in feet it is a reversion to the older ape-like form through the later acquired muscles of the lower leg not

fully developing. The human infant grasps and can hang from a stick when just born, like its monkey cousins; the protruding abdomen of the child is the same in Bushmen and pygmies and in the sketches made by cave dwellers. When early ape-like men left the forests to chase game across wide plains, and were compelled to develop fleetness to keep from being devoured themselves, their legs grew longer than their arms and a superior alertness also developed. Archæology shows that cave men were filthy beasts, dwelling in uncleaned holes, doubtless with no permanent mating, or such as began with violence and ended in slavery, Geikie¹¹ concludes that after having occupied English caves for untold ages Palæolithic man disappeared forever and with him vanished many animals now either locally or wholly extinct.

The animals living at the same time with man during the glacial period were the lion, leopard, hyena, elephant, hippopotamus, mastodon, elk, musk-sheep, reindeer, wolverine, fox, marmot, lemming, ibex, vole and chamois.

In parts of the Alps and in polar regions man is still in the ice age. He inhabited Europe when the melting snow formed rivers at high levels, much longer than those of our time. He has left his traces in implements of stone or bone. Stone tools survived into the bronze and iron age just as we find some tribes using flint arrow heads at this time. The deposits in which lie the remains of the early human traces are cavern loam, river alluvium, lake bottoms, peat mosses, sand dunes, and other superficial accumulations; and the animal remains of both tropic and arctic climates are mixed in the European deposits, which could be explained by cold and hot climates succeeding each other, or by the high mountains affording the icy temperature in which animals and men suited to polar climates developed, the hot sea at the base of such mountains at the same time making the foothills and what few narrow plains there were congenial to tropical forms, and between these elevations life adapted to temperate regions could thrive.

The assumption that man descended from a single source

¹¹ The Great Ice Age, p. 624.

located in a region near Java most favorable to his development has less evidence than that several races originated in widely separated parts of the earth. Like causes producing like effects, similarly constituted organisms very low in the scale of life could build up gradually the different races of men which finally became more or less mixed as the means of travel improved. Differences as well as resemblances are thus better accounted for. Especially is it likely that the stunted races such as the Lapps and Eskimo and the Philippine and African dwarfs were separately evolved from conditions and progenitors unlike those of the Aryan, Semitic or Turanian peoples. The early cave, cliff and lake dwellers who preceded the Celts into Europe might just as well have sprung into being from more adjacent forests and fields as to have come from some more distant spot. The "little men," the "fairies" and the "pixies" could have thus had a basis of reality in the Aryans having found the forests of their new homes full of monkeys, men-like apes and ape-like men with some still more human stone-age savages.

Adopting the polyphyletic origin of mankind in preference to the monophyletic, the separate beginnings of races rather than that they came from a single source, we are justified in regarding the stone age men to have sprung up here and there from ape like forms in the mountains of America, Europe and Asia, many of whom perished in conflicts with animals or invading races, while changes of climate drove out many more. Some of the stunted races may be descendants of certain peculiar aborigines. The dwarfs of Africa are an ape-like people with an origin separate and maybe antedating that of the larger blacks, though their language has been learned from the latter. Many dwarf races elsewhere have perished through changed conditions around them.

Stone age Indians may have been indigenous to North America or they may have come by way of the Aleutian islands, or by Behring's strait, where America and Asia are only 36 miles apart, but it is not unreasonable to suppose that the Peruvian civilization began and ended at its birthplace in the Andes of South America without aid from abroad. There were cities in this new world that rivaled those of the old world, lighted by

night, policed, containing palaces, temples, courts, schools, parks, aquæducts and fountains with graded roads and with workers in gold, silver, copper and bronze. The mound builders of the north have been claimed to be descendants of aborigines among whom some Welshmen settled. The tradition being that driven by storms to the coast of America long before Columbus sailed they followed down the Ohio river and founded the Natchez and Mandan tribes with others that have built mounds from the sources of the Mississippi and Missouri rivers to their mouths. The remnant of these tribes at Fort Berthold use tub-shaped boats made of hides such as ancient Welshmen were found to be paddling about in by the Romans, and are said to speak a Welsh dialect. Certainly the Mexican Aztecs had bloodthirsty rites resembling the religious butcheries of human beings by the Druids, which with what they knew of "civilization" may have been taught them by visitors from across the sea as their legends declared. The Yucatan Maias are reported to have been mixed with Japanese of 15 centuries ago as architectural remains are said to indicate, but in all these cases where advance beyond savagery is made by a race it is not necessary to imagine that the body of the race came from afar; it was often only the instruction, and in the case of the Peruvians what they knew appears to have been of home production.

The subsequent settlers among the primitive people of America, in some cases exterminating them, were Polynesians, Maoris, Hawaiians and Malays generally. Mexico tracing its Toltecs, it is stated, to emigrants from Catalina island. The indigenous and peculiar antique American civilizations rank with those of the Assyrians and Hindoos.

After an investigation of the "Lansing skull," found March 23, 1902, on a farm near Lansing, Kansas, Curator Long, of the Kansas City Public Museum, and Professor Williston, of Kansas University, believe it to be the skull of a prehistoric man, who probably lived during the glacial period, 35,000 years ago. The skull was found under well defined strata of earth and rock and river loess.

Prof. Warren K. Morehead¹² disposes of many illusions and superstitions concerning the original inhabitants of America. They were of rather low grade intelligence, divisible into broad and long heads with specimens of skulls occasionally found of a very low type resembling the Neanderthal skull with its projecting eyebrow ridges and retreating low forehead.

Dr. Frederick A. Cook, the explorer,¹³ says that the short races about the Western Chilean Channels and Strait are imperfectly developed, living on snails, crabs and fish and they have become almost extinct and were always the lowest and most abject of Fuegians. A similar race is in the Cape Horn region. A third race is one of giants called Onas by their neighbors and Yahgans they call themselves. They refuse missionaries and mistrust white men with good reason. They live on the main island of Tierra Del Fuego which is as large as New York State, guarding it carefully to keep others out, but the gold miners and sheep raisers have pushed these giants into the useless highlands to starve or freeze.

Scattered over the world are many highlands and peaks as well as mountain ranges that must have protruded as islands above the primeval hot sea, affording means for sea animals to gradually develop into forms suited to the land or to inhabit both land and sea, water reptiles into land reptiles and some of these into birds and mammals which by being able to generate internal heat were enabled to survive in higher, colder regions than those to which their progenitors were confined, through having their heat supplied by the temperature of the medium in which they lived. There could have been ages elapsing between the springing up of the different main races of men who, thousands of years later, may have mixed to a greater or less extent. Australia, for instance, is very much in arrears in the stages of development of its animal life, and is more akin to the Tertiary epoch than that of any other era, and the highest mammals of America are far behind those of the old world, and there are no man-like

¹² Primitive Man in Ohio, 1892, and in other books recording his important researches.

¹³ The Giant Indians of Tierra Del Fuego, March, 1900, Century Magazine.

apes in America, but the conditions in Chili and Peru appear to have favored a rapid evolution of man, while the aborigines of Australia were in keeping with the low stages of development of the animals there in general.

In the tropical Eurasian Miocene there lived an anthropomorphic ape, *Dryopithecus Fontanii*, and Bourgeois and Hany believe that the flint flakes and scrapers found in the Miocene strata of Thenay belonged to that period, so man lived with the mastodon, rhinoceros and other animals of the Miocene.

Leaving out of consideration poetical accounts of ancient dwarfs such as Homer made when he said they were as big as your fist and their deadly enemies were the cranes, there are authentic observations of these small people. Herodotus mentions negro dwarfs in Libya; Aristotle located them in the upper Nile; DuChaillu, Schweinfurth and Stanley describe them, and they have also been found in the Philippines. Professor D. C. Worcester of the American Commission to that place reports that there are about 25,000 of these pigmies, and that they are remarkably like monkeys, Dr. Becker placing their height at four feet eight inches; the women being about four inches shorter. Their chests and calves are poorly developed, each big toe is widely separated from the other toes, their feet are large and clumsy and their hair grows in scattered clumps over the scalp, their heads are too large for their bodies and their woolly mops make this appear greater; they can counterfeit apes in a startling manner, their jaws projecting far beyond their noses and their faces being deeply wrinkled like those of monkeys; they are naked except for loin cords and a clout or apron. They are monogamous and win wives by test of marksmanship with bows and blunt arrows, the woman being the target. These negritos have never been subdued by the Malays or Spaniards, they are gentle and do not murder wantonly but are suspicious of Christians who abuse them. They defend themselves vigorously and retaliate by robbing and destroying fields and villages at night. To their children they give the names of birds, plants and insects. They cannot count above ten and have no names for colors, though they can tell them apart. They desert the sick if a plague such as cholera or small pox breaks out.

The favorite weapon of the dwarfs wherever found has been the poisoned arrow, and their marksmanship is unerring. C. Morris¹⁴ says "the pigmies are always hunters, making the deep forests their home, and they are masters through their agility, cunning and deadly weapons, of the world of lower animals. Physically they are not far removed from the man-ape, their remote ancestor, for they retain various ape-like characters, as in aspect of face, shape of body, occasional hairiness, diminutive size, shortness of legs, imperfect development of calf, occasional waddling gait in walking, etc."

Morris further remarks that "in the Lapps of northern Europe we have another small race, possibly the lineal descendants of the Quaternary pigmies. Everywhere the small man has been forced to retire into forests, deserts and icy barrens before the stronger and taller men. The folk-lore of Europe is full of traditions of a race of dwarfs and their conflicts with men of a larger mold, and there are various indications that this race was once wide spread."

The remains of stone age men are found all over Europe with the bones of elephants, lions, rhinoceroses, hippopotami, hyenas and mammoths, dating from the rough stone age or palaeolithic period when rude flints, boulders, bones or pieces of horn and wood were the tools and weapons. Some of the tribes were without fires and even in our time there are savages who do not know the uses of fire in cooking. Worsae estimates the Scandinavian stone age as during and previous to 3,000 B. C., Bunsen estimating the human race as at least 20,000 years old, so it was during this time that the stone age began. The next age, that of polished stone, the neolithic, in the same region, extending between B. C. 2,000 and 1,000, when men carefully polished their stone implements. Kitchen middens or refuse heaps abound in Denmark and southward, in which are found shells and bones with other remains of the food eaten by these primitive people. There are races now living still in the stone age. The North American Indians were in this stone age state when America was discovered and many of them have not advanced beyond it. Aztecs got as far as the copper stage and the Peruvians passed to the bronze

¹⁴ Man and His Ancestor, p. 156.

age, while all other natives continued to use stone tools and weapons. Numerous stone circles in Britain and Ireland are thirty feet up to twelve hundred feet in diameter. The most imposing is near Devizes in Wiltshire, which Lubbock refers to the beginning of the bronze age. Stonehenge was built later. Many of these circles proved to be burial places, the original mound of earth covering them having washed away, while some were presumed to be temples. Carnac in Brittany consists of eleven rows of unhewn stone twenty-two feet or less in height. The avenues extended for miles. Most of the great tumuli in Brittany belong to the stone age.¹⁵

The bronze period for Scandinavia is placed at B. C. 1,000 to 500.

The early iron age generally for Europe dates from about A. D. 1 to 450, the later iron age extending between A. D. 700 to 1,000, but in Scandinavia the stone age lingered along in places as it did elsewhere in the north. The Eskimo are practically still in the stone age. Morlot assigns to the age of stone 7,000 years, bronze 4,200 years and to the early Roman period 1,800 years.

The Turanians form one of the oldest and largest races, for wherever the Aryans went they appear to have conquered a Turanian people and to have finally amalgamated with it. The origin of the name is in the Aryans calling Persia by the name of Iran, the land of light, after they settled there, and the north country full of barbarians they named Turan, or the land of darkness. As it is customary for primitive people to group all foreigners together as one race, these Turanians may have been composite, but ethnologists divide them into two branches, the Ugro-Finnic and Dravidian,¹⁶ another division is into the Turkic, Ugric, Finnic and Mongolic divisions. The Finns were a hunting folk, low in civilization, with neither wool, salt nor wagons with wheels, nor could they count to a hundred.¹⁷ The Finns preceded the Finno-Tartars, or Ural-Altaic family into Europe, the latter coming during historic times. Their relatives the Magyars settled in Hungary and were left there as the other

¹⁵ Sir J. Lubbock, *Prehistoric Times*, Chapter V.

¹⁶ F. Lenormont, *Manual of Ancient History of the East*, b. I., Ch. 4.

¹⁷ Hehn, *Culturpflanzen*.

Ugrics abandoned them and returned to Asia. The Manchu branch of Tartars captured China and mixed with the Mongols, though keeping themselves as distinct as possible for governing purposes, but passion is everywhere stronger than policy, accounting for the dark complexions of the children of white Aryan nobles among the Hindoo, the mixing of "children of the sun" with the "children of the earth" among the exclusive Aztecs, the Inca being regarded as a god. The tawny Egyptian skin comes from the governing white Semites being absorbed to extinction among the African blacks, as the few conquering Normans were finally lost among the multitude of Saxons of England. The Ugro-Finns subdivided into Turks, Hungarians, Finns, Esthonians and nearly all northern tribes in Europe and Asia. The Dravidian branch is in the south, consisting of the people of Hindustan, the Tamils, Telingos, Carnates, who were subjugated by the Aryans.

The Caucasus acted as a barrier between the north and south, stopping and turning aside the moving populations, and it also sheltered remnants of many different peoples driven into it. It is a kind of ethnological museum of countless races and languages, probably some from the early ages of the world. The term Caucasian is meaningless to designate any race, for the Caucasus is full, as in Strabo's time, of races differing in religion, languages, aspect, manner and character.¹⁸ The Georgians of that region seem to be related to the Iberians of Spain and Ireland. The Circassians are Mohammedans and were driven out by Russia to the number of half a million in 1866 and settled in various Turkish provinces. Their country was 200 miles in extent. The wild Kurds who have been roaming on the Mesopotamian outskirts for ages and who harass the Armenians are Turanian nomads.

The most powerful cause of migrations and of the development of all animals and mankind, physically and mentally, is simple, plain, ordinary hunger, and next in importance in such matters is the sexual function. These physiological motives have filled the earth with life, turmoil, strife, love capers, massacres,

¹⁸J. Bryce, Transcaucasia and Ararat, Ch. II.

hates and alliances. Fear, particularly in the form of superstition based upon insufficient observation of nature and fostered by the designs of those who fatten upon ignorance, comes after hunger and sexuality as a motor in human affairs. Then there are calamities like great storms, the sudden disappearance of rivers, volcanic action, earthquakes, drought, famine, pestilence, wars, etc. Peculiar winds gave origin to the conception of compass points and the incessant illusions of nature, traditional delusions, the tendency to exaggerate, the lies of travelers, merchants and priests, tended to keep the savage brain in a state of bewilderment and childish receptivity for any sort of silly ideas, design, ignorance or misinterpretation could impose upon it.¹⁹

The evolution of the family is by cohesion of several families into tribes and these into nations, the change of marriages between members of the same family to those between people not related causing decided improvement of stock. At first these marriages were by force and later by consent. The marriage relation is classified as: Consanguine, when between brother and sister; Punaluan when several sisters marry brothers interchangeably and jointly; Syndasmian when a single pair is not exclusive and live together during pleasure; Patriarchal with several wives, Monogamian, single and exclusive. While monogamy prevails among the most advanced nations, at least as far as pretence goes, it dates earlier than Christianity, being practiced in pagan Rome and among many primitive tribes who regarded it as advantageous; many birds and other animals pair singly for similar reasons. There is a superstitious tendency to ascribe any institution regarded as advantageous to a divine origin, disregarding the conditions of other kinds elsewhere as having equal claims to such distinction.

In northern Italy and Switzerland are the remains of dwellings built upon piling in the lakes by a very early folk now called lake dwellers and presumed to have been Celts. On the shores near these dwellings are evidences of the cultivation of barley, wheat and flax and that the horse, ox, sheep, goat, pig and dog were domesticated. The lake dwellers had considerable

¹⁹ H. T. Tozer, *A History of Ancient Geography*, 1887.

skill in weaving, rope making and pottery, but they had no potter's wheel.

Ancient burial places called barrows are scattered over Europe containing the bones of a long-headed and later a broad-headed race. The broad heads are supposed to have been those of the Celts, who drove out people like the Basques who had preceded them into Europe. These earlier races are presumed to have descendants in the dark haired and dark skinned people of Wales, Ireland, Corsica and elsewhere. At the dawn of history the Iberians found in Spain and southern France were of this dark skinned people, and their conservative, stubborn dispositions contrasted with those of the volatile Celts, their neighbors, with whom they subsequently mixed and become known as Celtiberians. The original Bretons of the northwest similarly were superseded by the Celts in modern Brittany from the British isles in the fifth century. The Basque descendants of these Iberians are found today in Viscaya, Alava, Guipuzcoa and Navarre of Spain and in the French department of basses Pyrénées. The Ivernians of Ireland, now also lost in the Celtic population, and the Ligurians of the gulf of Genoa who were later absorbed by the Romans, were ancient inhabitants. Another early settlement was made by Etruscans in Italy. All these were found in possession of their various spots in Europe by the swarms of immigrants who came out of the far east.

I. Taylor²⁰ thinks that because the Greeks called the Etruscans *Turrhenoi* that the similarity to *Turanian* might indicate the Etruscans were Turanians. It is of much more consequence what a tribe calls itself, for notoriously foreigners are dubbed any sort of name usually opprobrious, by adjacent people. The Chinese call Europeans foreign devils and barbarian was a favorite epithet for neighbors to apply to each other. The Etruscans called themselves *Rasenna* and were probably Phœnicians.

The Latin, Germanic and Slavic descendants of the Aryans form the bulk of the European population today, and are dominant races all over the world especially in Europe, America and Australia. The people found in Europe before the Aryans came

²⁰ Etruscan Researches, Ch. II.

are known as pre-Aryan, there were other races called non-Aryan; these were the ancient Jews, Finno-Tartars or the Ural-Altaic family, all of whom reached Europe in historic times, except the Finns.

All tribes the world over have been or remain in the hunting and fishing stages of savagery, or the second stage, the pastoral, when flocks and herds of animals are kept; the third stage is the farming, which has been gradually improved upon, the farming communities representing the highest races and the hunting the lowest, while the shepherd races are intermediate.

Africa is assumed to be divisible between four races, the negroes proper, with an enormous number of tribes, occupying central Africa, next are the Fulahs with whom the Nubians are associated, between Lake Chad and the Niger river, third are the Bantus of the south, fourth the bushmen or Bosjesman, and included with them sometimes are the Hottentots who live still farther south. Kaffirs and Bechuanas are Bantu tribes. North and southeast Africa are occupied by Semitic and Hamitic races, the latter including Abyssinians and Gallas.²¹ The union of the Aryan invaders of North Africa with the ancient coast people originated the Numidians and Mauri whose descendants are the Libyans, Berbers, Moors and others, who are regarded as separate from the negroes and Egyptians.²² The Kaffirs and Hottentots were the main aborigines in South Africa. Portuguese discovery and occupation dates from 1486 to 1806, during which the Dutch dispossessed them and the English got a foothold at the Cape. The Dutch made slaves of the blacks and the English bought the negroes and freed them, the Dutch moving north where they enslaved more negroes and worked gold mines found by Englishmen.

The Dutch acted on the idea that they were the chosen of God to make everybody work for them, but the English also had a mission to take all of South Africa they wanted, especially where there were gold mines, and a side mission was to free the negroes stolen by the Dutch and others.

Japan had as unreliable early mythology as Europe. It was

²¹ A. H. Keane, *The African Races*.

²² T. Mommsen, *History of Rome*, Bk. 8, Ch. XIII.

not till A. D. 600 when Buddhism was introduced that reliable records began. It was ruled by Shoguns from A. D. 1190 to 1867, but the Mikado was the theoretical head. There never were two emperors, as was asserted by European writers, but a real infant, who is powerless, figured as ruler, and he was changed for another when he adolested. When Commodore Perry, the American envoy, arrived, times were ripe for change, with many natives anxious to ride into power over the Shogun's fall. Japan awoke to civilized methods, its condition was like that of a child threatened with idiocy through being shut out from the rest of the world. While Chinamen seem unable to assimilate European ideas, apparently through their brains having crystallized, so to speak, at an infantile stage of development, the bright little Japs are not only able to imitate but to originate, and many are the valuable additions they have made to science and manufacture since aroused to occidental methods, while the Chinese stay at a servile imitative stage.

China proper was at first very small, its wall was built in the third century before Christ, and the origin of these Mongols is quite obscure, though they are particular in assigning 2,269,381 years to their country. They go beyond this also in describing a period when there was nothing, and they have a class of philosophers who go still earlier.

Philologists find affinities between the speech of the early Mongols and that of the Akkads of the Mesopotamian region. Chinese literature dates from the sixth century before Christ and periods previous to this in their writings are not authentic. The earliest Mongol invaders fought the aborigines along the Yellow River. Later Jingis Khan, A. D. 1215, conquered China.

The great Yellow River of China is called "The Sorrow of Han," because it would change its course through thousands of square miles of land which it swept away, drowning or starving off countries as though its people were of no more consequence to nature than so many ants or worms. A drought in the mountains has killed a million Chinese by famine in a few months.

A suggestion has been made that can be taken for what it is worth, that the slant eyes of Mongols are inherited from squir-

rel-like nut eating rodents whose eyes are thus slanted through looking at the nut as it was gnawed.

Confucius, or Kung-fu-tzee, the great Chinese philosopher, was born B. C. 551 and did not claim to be gifted above others, he merely strove after the good and to know the truth. He taught that perfection of manhood was the true aim in life, while sincerity, faithfulness and truthfulness afforded the groundwork for all his teaching. He was agnostic as to future life and he regarded death as merely in the course of nature and not to be dreaded. His theory of good government was to begin with the individual, to rectify him and the state would become rectified. .

When asked how to do away with thieves, he said: "If you were not yourselves covetous they would not steal, even if you were to pay them to do so." Sin was to him the cultivation of nature upon the plane of the small, mean, selfish, animal man. This he considered might come from heredity, accident of birth, environment, education or ignorance, over which the sinner may have had no control, and for which he was not accountable. He thought that rewards and punishments accompanied all deeds, those living in accordance with the laws of their being receiving noble character with contentment and happiness, while those on low animal planes had ignoble characters with anxiety and unhappiness. He pitied those who indulged greed and ignoble passion. Prevailing religious beliefs he looked upon as childish.

Malays came from the southeast regions of Asia, from the peninsula of farther India, and they spread south, east and west over the island world. The first occupation of Sumatra and Java was in B. C. 1000, or earlier, about the time of the Aryan migration to North India. The Malays are energetic, quick to perceive, genial but unscrupulous, cruel and revengeful. Veracity is unknown, the love of gain is their strongest affection, and this has caused them to be navigators, pirates, merchants, explorers. They gained Madagascar on the far west and found five and a half million negroids there, outnumbering them, but the eight hundred thousand Malay Hovas are the masters.²³ The Maoris of New Zealand are a higher type of Malay, they came

²³ D. G. Brinton, Races and Peoples, Lecture VIII.

to New Zealand about A. D. 1300 from Tahiti and Samoa. Some ethnologists place their migrations back to 3000 years ago.

High mountains with streams from icy peaks appear to have favored the development of the ape-like man, who still further advanced as the warm seas gave place to plains and he gradually spread over them in search of prey as a stone age savage. Ages pass, and some genius among them fashioned his stone implements smoothly by polishing and doubtless many such innovators paid the penalty of making improvements by being killed for being in league with evil spirits. While still a hunter and fisher, he found pieces of copper ore that could be hammered into shape for tools, and the most prodigious step was taken when, with fire he melted and moulded his tools, spears and arrow heads mainly. By accidental admixture of other metals with the copper the so-called bronze age arrived, merely because these aborigines did not know enough about the union of metals to make bronze until the knowledge was forced upon them by finding that the new castings were harder than the copper ones. The iron age was the last, and before this the raising of herds and flocks caused many tribes to pass from the hunting to the shepherd stage. The farming stage came to some tribes while still in either the stone or bronze period. Nor is it correct to imagine that all peoples came through these eras at the same time, for there are today some who remain in the stone age, the copper age, the hunting stage, or the shepherd stage, as survivals from earlier dates.

The general fondness for hunting and fishing shows that it is an easy drop backward to the practices of these ages, and I have personally observed that Germanic races, such as the English and Scandinavian, if mixed with North American Indians, try to lift the latter to their civilized plane, but French Canadians and other Latins drop readily to the savage level, and the Mexicans make the worst renegades among the red men. The fiercest compound I ever saw was a mixture of French Canadian, Black-foot Indian, Chinaman and Negro.

But the more we know of historic and pre-historic people the more it appears that mixture upon mixture interminably, has occurred, and that, strictly speaking, a pure race does not exist.

Man is still a baby so far as intelligence is concerned and the possibilities of what he might grow to be. It has taken millions of years for him to think of giving up slavery. It was only a century ago he learned about the power of steam, and fifty years ago that electricity might become his servant; such things as navigation and engineering have just dawned on him, and he has yet to appreciate what has been discovered about health and disease, the pack still listening to such fakirs as Eddyites, as the Africans do to their witch doctors. He has still his brutish instincts, his savage love of ornament. Even in organized combinations his robber traits are strongly apparent. But Evolution shows that he advances.

CHAPTER II.

THE ARYANS.

Animals in abundance roamed and contended along the shores of the primeval sea that washed both sides of the Himalaya range of icy peaked mountains where our blonde Aryan ancestry originated and developed on the high, wide Pamir plateau, a tableland where rank vegetation grew beside broad, rapid rivers fed by melting glaciers.

The flat plains of this "roof of the world" induced changes in the habits of the ape-like men who lived there; scampering over these prairies, their legs were lengthened, and forsaking the tree life of their ancestors their arms became shorter. *Pithecanthropus* was mainly erect and had outgrown the baby practice of going on all fours, and his descendants grew still more erect until hands were no longer used as feet and the hind feet ceased to be used as hands. Chasing his prey and keeping a sharp lookout for enemies, perception and adroitness were developed, together with fleetness, a more general intelligence, as he was able to do many things other animals could not do, such as subsisting upon a mixed diet of fruits and meats, he could travel farther and thrive better than animals hampered in diet and in other respects.

Oscar Peschel¹ remarks that it is easy for those who live in a temperate zone to recognize the favorable course of civilization of the high plateaux within the tropics. Their inhabitants escape the enervating atmosphere of the sultry lowlands; they are obliged to provide clothing and shelter as a protection against the weather; to avoid starvation they are obliged to till the ground and store provisions and forced to combine for various purposes. Sayce holds that the Aryans inhabited a cold country, their seasons were three in number, perhaps four, and not two, as would have been the case had they lived south of the temperate

¹ The Races of Men, p. 443.

zone. They were nomad herdsmen living in hovels that could be erected in a few hours and left again as the cattle moved into higher ground with the approach of spring, or descended into the valley as the winter advanced. Grinding corn was unknown, and crushed spelt was eaten instead of bread. Agriculture was rude and needles of bone were used to sew skins together, possibly there was spinning and weaving, though the latter does not appear to have advanced beyond plaiting reeds and withes. The community lived in the stone age, they made tools of stone and bone, and if they used gold or meteoric iron it was of the unwrought pieces picked up from the ground and worn as ornaments. They did not work metals. As among the savage tribes the various degrees of relationship were minutely distinguished and named, even the wife of the husband's brother receiving a special title, but they could count as far as a hundred. They believed in a multitude of ghosts and goblins, making offerings to the dead and seeing in the bright sky a potent deity. The birch, the pine and the withy were known to them; so also was the bear, wolf, hare, mouse, snake, goose, raven, quail and owl. Cattle, sheep, goats and swine were all kept, the dog was domesticated, and probably the horse. Boats with oars were used, the boats being possibly hollowed out of trunks of trees.

While many of these high tablelands were fertile in these earlier periods, great changes have followed up to modern times. There are still pastoral regions scattered about these plateaux, and the soil is rich and yields sweet and nourishing grasses, but the elevation is too high for farming. Mulberry trees thrive well and afford flour for the natives found there. The area of the Pamir plateau is 37,000 square miles, divided into flat valleys running northeast and southwest. It lies buried in snow half of the year and does not produce sufficient for the sparse settlements. Here are the headwaters of the famous Oxus river, and great interest has centered about these highlands, owing to traditions connected with their having been in remote periods the location of great events and dense populations who have left their traces in ruined cities and in legends. It is the Tsung-ling of Chinese writers, the northern Imaus of Ptolemy, and the mountain Parnassus of Aristotle; "the greatest of all that exists

toward the winter sunrise;" it is known as Bam-i-dunia, or "the roof of the world," and modern geographers have called it "the heart of Asia," and the "central boss of Asia." The geographical indications, according to Reclus,² point to it as Meru, the scene of the primeval Aryans' paradise. Old Parsee traditions locate it as the origin and nucleus of the Aryan migrations. And it is here that the Mohammedan invaders identify the Gihon and Pison rivers, and claim the Oxus valley as the former paradise and other things indicate that here was the "cradle of the human race."

The twin rivers Oxus (Amu-daria) and the Sir-daria flow now into the Aral sea, and in prehistoric times they formed a single broad river flowing northwest when the glacial torrents were higher, running into the Caspian sea, on the west side of which are the Caucasus mountains, with old marine shores visible 500 feet above the present water level, indicating that both the Aral and Caspian seas were formerly one body of water and pointing to an era when most of Asia and Europe were ocean beds. The inference that the Aral could not have been part of the ocean because it is less salt than the Mediterranean is from a failure to consider that glacial floods have been freshening that sea from mountain streams since the original ocean receded.

At present the hills of the Oxus grow pines and junipers below their glaciers, and in some valleys apricots and other fruits. Marco Polo spoke of the fine grazing there for stock, the ruins of cities, and that there had been many people in the region formerly. But the lakes have become deserts, and the sand has filled and changed the river courses, driving the Oxus away from the Caspian to the Aral, destroying the vegetation, and depopulating this once thriving country. The space between the Sir-daria and the Ural mountains is known as the region of black sands; between the Oxus and the Sir-daria, that of red sands, and south of the Chu, white sands, and by their commingling the entire desert is ashy gray in color. The Caspian is more salty than the Aral, which is only brackish. There are rivers all about that dreadful desert of Gobi that end in the sky, for the streams from melted glaciers, wide and deep at first, become

² Asia, Vol. I.

shallow and narrow, and are finally drunk by the hot, dry sands; while a portion passes under the soil, the greater part evaporates, so the rivers have no mouths; rainfalls have often been observed to disappear before reaching the ground, the heat causing the rain to vaporize. This desert country was once adapted to the needs of the people; it was fertile, covered with flocks and herds, and abounding in animals, vegetation and pure water, with a sufficiently congenial climate to cause it to be spoken of by many generations of the descendants of those who had been forced to leave it.

By the inclination to "ancientism," or regarding far-off days as better than the present, coupled with the disposition to exaggerate, that was customary in the childish period of the world, and the oriental inability to confine one's self to facts, it seems that the camp-fire tales of the ancient Munchausens combined into legends of a paradise. The Mohammedan traditions place their paradise along the Oxus, while some of the Semitic races refer theirs to the upper Mesopotamian valley, north of the Tigris. With all races it was always somewhere else than where they then lived. For that matter the Aryans could have developed in the Thibetan highlands on the "roof of the world," and descended into the Oxus valley as the ocean fell lower and made new garden-spots for them, while the great Babylonian civilization had an independent source near the Black sea, with the people gradually leaving the high Persian plateau and settling along the Euphrates and Tigris rivers as the waters abated, becoming mixed with the Akkads and Sumerians of the Mesopotamian plains, coming from other points of the compass and from other centers of development—from lower animals into men. That races need not have a single source, and, least of all, have come from a single pair, is evident in regarding such descents as that of the several breeds of horses which have come from similar stock, but not the same pair.³ Also that American fossil horses are proven to have evolved in direct lines wholly distinct from the horses of Europe.

The Aryans sought other lands when their chief river became a flood three or four times a year, and the hostile Turanians

³ Darwin, *Origin of Species*, Ch. VII.; Part I., p. 180.

harassed them and sands drifted over many of their most fertile countries. Migrations from these parts appear to have occurred at different stages of Aryan development, as they passed through the stone age, while hunters, and became pastoral and finally agricultural. We may arbitrarily date the earliest wave of emigration from Arya at about 50,000 years ago, as there is some evidence of the southern route around the Caspian sea having been preferred, presumably because the northern may have presented physical obstacles. It had, down to historical times, the reputation of being full of icy terrors. Explorers may have returned to the Oxus and informed the parent tribes of routes and other particulars, resulting in a steady annual outpouring of young people toward the Caspian, then southwardly and to the west, until the south coast of the Black sea was passed, when these earliest of immigrants spread over northern and central Europe. These first offshoots of the Aryans became the Celts, and as rabbits in Australia, and sparrows in America, thrived and increased in the new countries, so these newcomers found Europe more congenial than Asia. Long before this Turanian tribes, Finns, Lapps and Basques, roamed through the whole continent, fighting occasional bands of cave-dwellers. All who were found in Europe by the Celts were killed off, driven away or mingled with. Tribe after tribe of the Celts split off and fought one another, and it was not till several tribes confederated that they became formidable. Independent tribes were speedily subjugated here and there, but they left enough of each other to spread widely into hunting and fishing bodies, and their dialects grew into separate languages, though still retaining their family resemblances. The lake-dwellers of Europe were very likely Celts, as are the Bretons of France, the Welsh, Highland Scotch, Celtic Irish, Cornish, Manx and the main stock of the French.

While the Aryans were still in the stone age, though several thousand years later, the Greek and Roman stock left the old Oxus region and gradually settled near the northern shores of the Mediterranean, and found the Etruscans had settled in Italy before them, having migrated from Phœnicia, a country of Semites. Even in these times hosts of people do not know their

own grandparents or cousins, though very likely Celts and Romans would have differed and fought just the same had they been aware of their relationship, so the Celts from the north bothered the Greeks and Romans as much as the Turanian northerners did their Aryan neighbors.

Still later the Teutonic branch started away from Arya, taking a northward route around the Caspian, an early branch of cohesive, stalwart and therefore strong people, being the Scandinavian. The Celts and Teutons contended in their northern regions and as a legacy of those far-off encounters we have inherited the differences of opinion between the Irish and English, the French and Germans.

A final branch of Aryans called the Slavs was driven north and northeast by Turanians, but the Slavs finally dominated and have penned up many of their enemies in mountain places, or driven them to less hospitable regions. The Russian descendants of the Slavs of today are trying to take away the remnant of the liberties of the Finns, whom they drove westward in far-off ages, whence the Teutons drove them north into the swamps and hills of Finland. Sweden founded the first Russian union of Slavonian tribes which sought possession of Turkey.

All that was left of the parent Aryan settlements broke up and went south. Some catastrophe caused them to forsake their land and leave in two streams, one of which passed over the Hindu-Kush and Himalayan mountains to the Punjab and Ganges, and became the controlling race in India. The other branch went southwest and became Medes and Persians, who called their country Iran, which is the name retained by the modern Persians for their present boundaries. Modern Armenians are from the ancient Persians, and so they are also Aryans.

The Aryan settlers in India developed a written literature in a language called Sanscrit, which dates back to B. C. 1500, and ceased to be spoken in B. C. 200. The Aryans settled in India about B. C. 2000, when Assyria was under Babylon and Memphis was ruled by Hyksos. The rajahs of Arya fought not only the southern low castes, but among themselves also, just as the Celts have done. The Hindoo Rig-Veda is a collection of hymns and prayers dating from the 10th to the 15th century before

Christ, and Sanscrit descended from the original Aryan language just as the Persian and European languages came from the same roots. The spoken language separated, as do all languages, into the learned and the unlearned, the Sanscrit was the former and the Hindoo was the latter. Sanscrit was intentionally made complex and was devoted to religion and literature, beyond the touch of the vulgar herd, to enable the lofty to take advantage of the lowly. All important literary languages, living or dead, are Aryan, except Hebrew, Arabic and Egyptian. In the Persian branch of the Aryan language is written the Zend-Avesta of the great teacher Zoroaster. The Parsees, or fire worshippers of modern India, were followers of Zoroaster.

According to von Ihering⁴ the Aryans were originally a pastoral people, living in a hot zone, with their cattle herded in the open, as no word for stable was in their language; leather aprons were their ancient dress, and their migrations began in March and stopped the last of May. He insists that they were ignorant of agriculture till the Akkadians taught them to plough and plant later, that they were shepherds, settled and numerous, did not live in towns, knew nothing of metals, their laws were undeveloped, they made sacrifices to the dead, and brought the widow-burning suttee into India; that the present condition of the low-caste Hindus is probably that of the ancient Aryans; that hunger was the cause of the emigrations; that they put the aged to death, and also destroyed the weak and sickly children, as their Roman descendants did later.

Kafiristan is a country near the Pamir plateau in Asia, near the region from whence the original Aryans emigrated, and is of great interest as the present home of a yellow-haired, blue-eyed people called Kaffirs, or infidels, by the Mohammedans, because they refuse to give up their ancient religion, and they are constantly fighting the Musselmans. They are free, but not united, the patriarchal system prevailing; the tribes are but loosely held together, and are often at war with one another, much as their Irish relatives have been. Owing to their appearance they call themselves the "brothers of the English." Their

⁴ The Evolution of the Aryans, by Rudolph von Ihering, 1897.

isolation may have enabled them to preserve ancient Aryan features as a survival from those remote periods. There is significance in Teutonic and Celtic young, especially English and Scandinavian, having yellow hair and blue eyes with fair complexions, however brunette they may develop later, suggesting that as earliest racial traits appear first in the infant the Aryan foundation and origin of our people may be plainly observed in some of our children.

The first people known in Ireland were Formorians, of Turanian origin, dark, low-browed, stunted, utterly savage hunters and fishermen, ignorant of metals and pottery and possibly of fire, using stone hammers. Many Irish names are said to date from them. They appeared like Lapps. The pre-Aryan Ivernians, who were the possible Iberians of the British Isles, related to those in Spain and to the Georgians of the Caucasus, were forced back into the recesses of Scotland and Ireland, and next came the Celts in two divisions, the Gaels and Britons. The Cymri or Kymri, hence Cambria, was a great Celtic family, to which the Britons belonged and which it was claimed came from Asia and settled in Europe B. C. 1500. Gaelic is the northern branch of the Celtic language, which includes among other offshoots ancient French, Irish, Erse, or Highland Scottish, and Manx. Then there settled in Ireland the Belgic colony of Firbolgs, a higher race, but short, dark and swarthy. Patricius, a Celt of Gaul, introduced Christianity in the fifth century, but not the papal kind, and invaders later were Twatha-da-Danaans in the east country, believed to have been large blue-eyed Scandinavian kinsmen of the Norsemen, or Danes. They were conquered by the Milesians or Scoti, giving to Ireland the name of Scotia, by which name it was known down to the twelfth century, the conquered being driven into the forests and hills, from which they emerged with unpleasant effects upon their conquerors. In the ninth and tenth centuries the Danes swarmed from all the Baltic islands and shores. Galls means foreigners. The Fin-galls were white foreigners, the Norwegians, while the Dubh-galls were black foreigners from Jutland. A large tract north of Dublin is called Fingall. The Vikings settled Caithness and Sutherland, while Limerick, Cork, Dublin, Waterford, Wexford

became petty Danish kingdoms till overturned by Brian. Roman historians describe the Britons as a blonde race with yellow hair, but their descendants in Wales and Cornwall have dark complexions and brown or black hair. Picts and Scots were the names of the early inhabitants. The word pict was Roman, meaning painted or tattooed, and the Scots called themselves Cruithnig, meaning tattooed, in their own language. The Scots were from the north of Ireland, having the Celtic name Scoti.⁵ Britons of the sixth century were restricted to the west of the island, the eastern part being under German influence. Wales, Ireland, Cornwall and the isle of Man are Celtic. The English, Irish and Scotch today are Danes, Swedes, Norwegians, Celts, Saxons, Angles, Jutes, Low Dutch, German, French and Norman. The Anglo-Saxon and Jute invasions were practically wars of extermination from the sixth to the eighth centuries. The Celtic race is represented mainly only in Wales and in the west parts of Scotland and Ireland. Later the Danes and Normans brought a slight Germanic, Scandinavian influence, but no marked modification of the Saxon stock. The Angles, Saxons and Jutes of the fifth and seventh centuries fused with the Danes. Though the kings grew stronger and the nobles and people grew further apart, their townships, hundreds and moots made and administered law. Anglo-Saxon is an absurd designation, similar to other accidental names for mixed peoples. Green says that conquest begat the king, for in the war against the British a common leader was wanted, hence the sons of Henquist became kings in Kent, the sons of Aelle kings in Sussex, the west Saxons chose Cerdic, and with the king came the slave.⁶ It was by survival of the strongest that Northumbria dominated in England in the seventh century. "Over-kings" were practically emperors through the strongest king reducing other kings, or, what amounted to the same thing, the conquered kings were reduced to dukes and but one king was left to reign over all. After the English tribes had conquered the Britons in A. D. 518 they quarreled and fought each other for overlordship. Aethelbert established supremacy over the Saxons of Middlesex and Essex, and

⁵ J. Rhys, *Celtic Britain*, Ch. VII.

⁶ John Richard Green, *A Short History of the English People*, p. 18.

the English of East Anglia and Mercia as far north as the Humber and the Trent.

William the First introduced the French language, laws and customs into England in 1066. Law pleadings were changed back to English by Edward III in 1362. Mathew Arnold⁷ says: "English is a vast obscure Cymric Celtic base with a vast visible Germanic superstructure. Its humor is a dash of Celtic impulse and fancy clashing with our Germanicism." This is still more pronounced in America, where the Celto-Germanic fusion starts afresh. The Goths and Vandals became Romans, the Normans became Saxons in England and Irish in Ireland, the Anglo-Saxon-Norman conquest introduced the feudal system, DeBurghs became Burkes, Veres became MacSweenies, the English became Celticized in Ireland as Spaniards were Cubans and English turned to Americans, but it is amusing that the Irish, who cling so tenaciously to the prejudices of their remote ancestry, consist of Danes, Norwegians and English, with Scotch, German and Jutes. Much of this hatred, however, is due to great injustice heaped upon those forced to live in Ireland irrespective of their origin and a political religion keeps them too ignorant to enable them to find an intelligent way out of their difficulties.

The ecclesiastical grab game proceeded to absorb public and private property in England until the church, as in Spain, Italy and elsewhere, owned such vast areas of land that national decay was threatened till the secular grab came in the law of mortmain; the common people are best off when the mighty, especially priest and king, grab from one another.

London was supposed to have originated in a camp of Roman soldiers, the name meaning lake fort or Leyn-din in British, a piece of high ground rising out of a lake swamp and estuary A. D. 43. In 61 it was destroyed by Icenis, under Boadicea, when 70,000 Roman colonists perished. In 1666 occurred the great fire, preceded the year before by the great plague in London. The streets were first lighted in 1685. A set of silly kings fell upon England in the seventeenth century, the Stuarts, and finally Cromwell stripped away much of the nonsense of royalty and

⁷ On the Study of Celtic Literature, 1883, p. 64.

the government of England now rests with parliament for all time. Practically a republic, calling itself a monarchy.

A remarkable warrior ability in the Irish affords many noted generals in England, France, America and elsewhere, such as Grant, Sherman, Sheridan, Wellington, Roberts, Kitchener, MacMahon. The Irish have a genius for small politics, they are clannish, tribal and municipal, but seldom combine on larger issues. They have the fighting habit, and feel compelled to fight among themselves; this belligerency can be ascribed to the incessant warfare of their ancestry, first with wild beasts and nature generally, and next with enemies who drove the original settlers toward the sea, and finally the Celt, himself severely hunted, drove these before him and mated with their survivors. So that the fighting, irritable, alert, quick, reckless national traits can thus be explained as habit which became transmitted through thousands of years. The sixteenth century brought religious differences, under Cromwell and William of Orange protestants were oppressive to the catholics, English trade tried to grab Irish patronage and subjugate their industries, they hindered development by atrocious legislation, and reduced the peasantry to serfs. At the end of the eighteenth century, says Larned,⁸ Ireland was still weakly fighting her oppressors, without judgment or enduring resolution; finally the conscience of the English was aroused and the Irish were allowed some rights, of which they do not make the best use, occasionally as members of parliament seeking revenge, rather than sensible legislation for all. Rancor is often foolishly exhibited by both sides.

There are many descendants of English Jacobites, those who wanted King James' family succession, and who favored the Stuart pretenders, and other fugitives, living in the mountains of North Carolina and Virginia. They preserve the dialect of James' time. The Canadian French patois is an ancient French tongue. The South American states are crude, semi-barbarous, non-cohesive affairs, such as abounded in the middle ages, with the language spoken in Spain 400 years ago. California in 1847 had a population of 6,000 Mexicans and 200,000 Indians, both of

⁸ Topical History.

whom are supplanted by the Europeans who call themselves Americans, and this European invasion has gradually filled all other parts of the United States, obliterating the savages and tending to the formation of a homogeneous people from widely separated Aryan and Semitic branches, brought together in America, the liberties they enjoy enabling superior development, which is beginning to have its effect upon the old world in many ways to arrest the fossilizing tendency of its thoughts and methods.

The Creoles of Louisiana are mixed Spanish and French, and in the north the English predominate, mixed with Celtic and Germanic people, the original settlers from the "round heads" and "cavaliers" being overwhelmed, which at one time placed witch-burning Puritans in New England and insolent, brawling "royalists" in Virginia and southward. A Scotch-Irish stream set in to America in the early part of the eighteenth century, and continued at the rate of sometimes twelve thousand a year from 1729 to 1755. They settled mainly in East Pennsylvania, Maryland, Virginia, the Carolinas, Georgia, Kentucky and the Mississippi valley. This stock furnished the Union with many of its most notable characters, among whom were Jefferson, Madison, Calhoun, Benton, Henry, Poe, Justice Marshall, Doctors McDowell and Sims, Generals Lee and Jackson, Sailor Paul Jones, Presidents Monroe, Taylor, Polk and Johnson.

Mr. James M. Barnard, of Boston, told me that when my father, the American sculptor, brought to Italy the clay models of his busts of Daniel Webster, Henry Clay, Chief Justice Shaw and others, to be finished in marble, the Italian marble workers exclaimed: "You have brought back the heads of the old Romans!" Mr. Barnard suggests that it is not unlikely that the Roman generals and soldiery, so long encamped in the British isles, left their impress upon the people, apparently strongly among the Scotch-Irish, from whom so many famous Americans descended.

Long after the Celtic branch of the Aryans had skirted the Black and Mediterranean seas and passed northward, the swarms from whom the Greeks and Romans originated moved over the Bosphorus and Dardanelles. In the seventh century before Christ, Macedonia was occupied by a few scattered inland towns

of rude tribes, but they were brave and pugnacious; the Persian yoke of the fifth century B. C. was thrown off, and in the fourth century Alexander overran Persia. Greece afforded a favorable place for the development of civilization through early relations with Phoenicia and Egypt. Kingship was at first patriarchal, but usually gave way to a few powerful schemers, oligarchies, which in time were overthrown by adventurers leading the people, and these "tyrants" soon fell in their turn. In Athens there arose the purest democracy the world has ever seen, but harshness and arrogance induced by prosperity caused the downfall of Athens. Statesmen who had the welfare of the people at heart and were capable and honest were treated with contempt by the ignorant, rapacious rabble, who were easily led by demagogues. With the change of Roman imperialism to its disguise, Greece reigned in the name of Rome and fought a thousand years with barbarians. With Constantinople as its capital, the Byzantine empire inherited the conjoint strength and glories of Rome, Greece and Macedonia, and was the bulwark of Europe against the oriental danger. Hallam says its history was one of crimes and revolutions. In the tenth century it was vicious, cowardly, wealthy and enlightened; of the seventy-six emperors and five empresses fifteen were put to death, seven were blinded or otherwise mutilated, four were deposed and imprisoned in monasteries and ten were compelled to abdicate. Half of the whole number were treated with violence.

The turmoil of the early Greeks or Hellenes appears in the hordes of Thessaly, pouring down upon the Dorians and driving them out, whereupon they drove others out in turn. Tribes from the lowlands expelled the Thebans, and the Dorians are supposed to have killed off a superior race. The Achaian civilization is placed between B. C. 1700 to 1400 in the southern peninsula, or Peloponessus.

Boetia became the name of a mixed lot of races, and leagues between the cities were made with Thebes at the head.

The Ionians were also driven while driving others. They were superior intellectually, with Athens as their chief city. The ascendancy of Pericles made the golden age of Athens, but in a

war of twenty-seven years Athens was overthrown by the Peloponnesian league.

Monarchies, aristocracies, democracies existed side by side, and were often leagued together, at peace awhile, and then at war with each other. There were tyrannies alongside of representative governments. Solon, B. C. 594, founded the Athenian democracy. The first real union of Greece came in B. C. 491, through the threats of Persia.

Sparta, the oligarchy, excited jealousy, and so did Athens, the democracy. The Greeks fought each other, class against class. Droughts, plagues, earthquakes, famines occurred, and the Persians fomented strife by corrupting the Greeks with money, as later still did the Romans in their conquests during the second and third centuries B. C.

The Aryan emigrants were confirmed travelers, and carried with them many ancient customs, which in the course of time were intensified by being made sacred rites. The regular spring-time leaving of the young people selected for banishment became a religious duty with the Romans, and was known as the *Ver Sacrum*. With the increase of population and scarcity of food the Aryan emigration became a means of depleting the nation. Another custom was to get rid of the aged who encumbered the march by throwing them to the fishes. With Slavs and Teutons far into historical times, the aged were put to death.⁹ The Roman Pontifices were bridge builders and priests because they bound the river gods in fetters, hence pontifical, a term preserved to this day for the pontiff, or high priest. Another significant survival occurs in the archbishop's hat, which resembles the head of a fish, the mitre, having come down from the headgear of the priests of Dagon, the fish god. The ancient pontifical office included throwing the aged into the river as a sacrifice, thus propitiating the river gods and getting rid of the old and infirm at the same time. Later the Romans realized the value of experience and insight which age acquired, and they ensured the services of old men for the commonwealth by a special institution, *senatus*, but reminiscences of the former custom were preserved in the sacri-

⁹ Grimm, *Deutsche Rechtsaltertümer*, p. 486.

fice of the Argei, and in the expression *senes de pontani*. To these we owe the knowledge that when crossing a stream during the march the old people were thrown over the bridge.¹⁰ The stone age existed at the time of the marching Romans, for their earliest bridges were held together by wooden nails at a time when the Jews and Persians used copper for nails, before their iron age began.

The various warfares leading to an intermingling of tribes reads, especially in Mediterranean history, like descriptions of wave after wave of grasses, herbs and bushes growing into and around each others' location, exterminating, supplanting, crossing, commingling, slowly or rapidly, with a finally reached compromise and *modus vivendi*, which may be but a new starting point for the incessant battle of life, alike for plants, animals and man. The early Italians were invaders who were constantly repelling invaders. As Italy first appeared in history it contained a number of races mainly Aryans, with Etruscan Semites on the west shore of the Tiber, while in the north were the Aryan Gauls in the valley of the Po, with pre-Aryan Ligurians and Aryan Venetians on the west and east coasts. All received the Latin stamp with the growing power of Rome. The Latin and Sabine tribes on the Tiber founded Rome in B. C. 776. Kindred tribes settled around them, but the first families jealously held themselves above them, and permitted them to have only a pseudo-citizenship, with more burdens than privileges. These plebeians got tired of fighting the battles and being cuffed about by the politicians who monopolized all the offices and the conquered lands, so a class struggle occurred which shaped the domestic politics of Rome for two centuries, B. C. 500. Dionysius, Plutarch, Livy and others credit traditions of long wars with the Sabines after the expulsion of the Tarquins, but Macauley says that modern skeptical criticism concludes the entire matter to be fictitious. An oligarchy cast out kings who were the early chiefs, and put two yearly chosen consuls in their places, thus founding the great Roman republic with an aristocratic constitution; the plebs fought for the democratic government, and tribunes were

¹⁰Rudolph von Ihering, *The Evolution of the Aryans*, Ch. III., Bk. IV.

elected to represent the people and secure some equality with patricians, who were the successful grabbers of power. Livy called the patricians *nobilis*, those who are known; the people were *ignobilis*, persons unknown; hence the origin of noble and ignoble, but they united in warring until the whole Italian peninsula was under Roman rule, and then they intruded into Sicily and Carthage, and even to Asia Minor down to the second century before Christ, but corruption set in by spoils of conquest and streams of tribute money from three continents. Leprous with slavery, the middle class disappeared, freeman were supplanted by slaves, small farms were superseded by large slave-worked estates, tricks of law placed lands with the few, the common people degenerated into mobs, and a new aristocracy arose to control the government; demagogues swayed the rabble, and even patriots had to play the hypocrite. In the first century before Christ came reform undertakings foiled, social and civil wars, and Cæsar founded an imperial autocracy with all the diseases which had destroyed the republic, but from thence to the fifth century A. D. organization worked in spite of emperors who were fools, fiends, or insane, while Rome was a sink of vices and misery, with oppression throughout the empire. The last generation of Republican Rome witnessed the sinister strifes and intrigues, the machinations and corruptions of a stupendous and wicked game in politics that was played against one another and against the republic by a few daring, unscrupulous players, with the empire of the civilized world for the stake between them. Three main players were Pompeius, Crassus and Julius Cæsar.

Cicero and Cato bore a less selfish part in the contest. They could not realize that the former times had passed and that worse was to come. Christianity spread over it and gave some promise of regenerating the empire, but the oppressors, finding that they could not crush the movement, placed themselves at its head, and the same old oligarchy, the same old greed of power, the same demagogism, hypocrisy, corruption and indifference to the real welfare of the people, while pretending great solicitude for the souls of all, still governs as the empire was governed in its worst days, and, as Larned says: "When the ecclesiasticism of a politically fashioned church was grafted upon Christianity, it

then bore the evil seeds of new corruption, new discord, new maladies for the Roman world." The popes were practically emperors, who, like those in early Babylonian history, united the functions of both priest and king in the patesis. The old pagan emperors never lost a chance to make gods of themselves.

It was not enough for tribes of different religions to destroy one another, but factions would arise among those of one kind of belief, and from the second to the sixth century the question whether we should worship one god or three deluged the country with blood. The Arians were a Christian sect who raised this doubt. In Russia today the peasants kill one another over similar silly issues.

On the south coast of the Mediterranean was the powerful Carthaginian people, who were rivals with the Romans for possession of the world. They were Phoenicians, and engaged with the Romans in the Punic wars, from which came the word punish, at intervals during the third and second centuries before Christ, in one of which Scipio "brought the war into Africa," after Hannibal had crossed the sea and had been at the gates of Rome, but finally Carthage was destroyed by Rome, and its menace to the world ended. Europe would have been Semitized had Carthage prevailed. The existence of such things as mercenary armies in those times, ready to fight upon any side for booty, shows how the hope of gain may prompt wholesale treason at favorable periods, and the relentless extermination of the European mercenary allies of the Carthaginians by the very people for whom they fought when these mercenaries became too importunate for their pay, reminds us of the old saying that "the devil may pay in bad coin," and that mankind does not always have to believe in the justness of a cause to be able to fight for it; in fact, the infection of imitation and love of gain and excitement figure greatly in all wars at all times.

A glance down the chronology of such old times suffices to show the ferocity of such periods, and in spite of it and of the numbers of rulers slain, how administrative systems went on with little disturbance or change, and how mankind lost the ability to ever think of any different political state; government persisted in spite of individual sovereigns destroyed, for during the first

three centuries of the Christian era violent deaths, mainly in civil strife, removed Cæsar, Cicero, Caligula, Claudius, Nero, Domitian, Commodus, Pertinax, Geta, Caracella, Elagabalus, Severus, Gallus, Aurelius, Gallienus, Aurelian, Probus, Numerian.

The Roman empire occupied both sides of the Mediterranean sea and Asia Minor, Jerusalem being captured B. C. 63, Julius Cæsar having invaded Gaul eight years before this. By A. D. 300 Constantine concluded to recognize Christianity as the state religion, as it had become strong enough to maintain itself whether he fought it or not; so, like the coach dog which finds out which way the horses go, he ran ahead of the procession and appeared to lead it; some historical commentators declare that Constantine was a pagan all his life, and never gave more than tacit support to Christianity till near the close of his days, nor did the adoption of the religion of forgiveness and mercy make the Romans a particle less brutal, for we hear of Roman Christian spectators of arena combats between pagan captives, the old brutality persisting through change of state religion. Britain was conquered, but Persia stopped the progress of Roman arms eastward.

The Aryan settlers and unsettlors from the north mix up with Roman affairs about this time and later, so they must now be regarded. The Germanic or Teutonic people include many divisions, most prominent of which were the Scandinavians comprising the Danes, Norwegians and Swedes; the other Germanic people are the English, Germans and Hollandish. Many traditions point to Sweden as the region earliest occupied by Aryans, and Penka thinks this primitive people originated there. The mountains of Norway show the traces of stone-age men preceding the Aryans at a time when the contiguous Sweden was still beneath the sea. The Goths were the Teutons of the low German family, and with the Alemanni were first heard of at Rome, in the third century after Christ, as overrunning the country and sea eastward, their piratical expeditions were extended into Asia, as well as along the coast of Gaul. Gibbon thinks that the Goths and Vandals were originally one great people. The Franks were a powerful combination of German tribes on the Rhine, warring with Gaul and Britain; they were defeated by Constantine A. D.

306, who compelled several thousand captive Franks, including their kings Regasius and Ascaricus, to fight with wild beasts in the circus of Treves, to the inexpressible delight of the Christian spectators.¹¹ Burgundy was formed about the middle of the fourth century, on either side of the Elbe, by a numerous Vandal people, swelling into a powerful kingdom; in A. D. 500 it was divided into two parts by kings who were brothers, one of whom conspired with Clovis, the Frank king, to overthrow the elder at Dijon, who finally captured his treacherous brother and put him to death.¹² Burgundy was finally captured by the Franks in A. D. 533, and in 1032 Germany absorbed the main country.

The decline of Rome was attended by Visigothic invasions, those of Attila the Hun, a Turanian, and the fall of the western Roman empire during the fifth and sixth centuries. The Germans were merged and finally lost in the greater mass of the conquered, as the Normans were lost among the Saxons. In Lombardy the Germans made more impression. Justinian recovered Italy, and now a new terror arose from Asia in the rapidly growing Arabian empire, extending over Persia and Asia Minor and finally along the south coast of the Mediterranean sea. Its origin was through Mohammed, the fanatic who, when forty years old, claimed to be the apostle of God to root out idolatry. He stole much of his theology from Christian teaching. When fifty he began hostilities, probably through his epilepsy making him reckless. He had convulsions, and told of his heavenly visions that came to him in his fits, revelations, as shown by the Koran, mainly to enable him to take another wife, a scheme that was successfully copied by Brigham Young, the Mormon prophet twelve hundred years later. This Arabian empire became the Mohammedan, and later the Ottoman empire, but it was unchanged in its determination to overrun the world, its first repulse was at Constantinople in the seventh century, but it subjugated the Turks and Spain soon afterward, and while the Mohammedan armies were triumphantly marching northward from Spain they were met by Charles Martel, the memorable, who defeated them in a great battle between Poitiers and Tours in 732. This battle

¹¹ W. C. Perry, *The Franks*, Ch. IV.

¹² F. Hodgkin, *Italy and Her Invaders*, Bk. IV., Ch. 9.

delivered Europe from the dread of Musselmans invasions thereafter. Among buffer regions against Moslem invasion today are the Balkan states and Danube river, where Greek, Bulgarian and Turkish villages exist side by side.

Constantinople was finally captured from the Christians by the Turks in A. D. 1453. In 1836 Mohammed II tried to give an European reformation to his state, but the Jannisaries, or royal guards, turned against him. Six thousand of them were killed by the sultan's adherents, and fifteen thousand were exiled. The Jannisaries had previously contributed to Turkish success, but became a source of danger to the government, as did the crusading knights templar on their return to Europe, the government being compelled to disband them in self-defense, from which is learned that organizations may eventually outlive their usefulness and subvert the very principles they were created to maintain, and that reforms are often opposed most by the people who would be most benefited by them.

From Norway and the Baltic isles came the Norse pirates, who called themselves sons of Odin, and treated the Christian Teutons with contempt. In the ninth century they overran France and sacked its cities, but were driven back by the Mohammedans of the Spanish peninsula. The Norse carried off thousands of captives, mainly women, from all the countries they invaded, suggesting that light-haired boys and black-haired girls in Germanic families are reversions to the Norse male blondes and Mediterranean female brunettes of these rough old periods. Between the years 986 and 1011 it was thought that the Norse Vikings made voyages to America. The Norse empire finally broke up during the tenth to the thirteenth centuries, but in the eleventh and twelfth centuries they overran South Italy and Sicily, sacked and burned Rome, ravaged Greece and attempted the conquest of the Byzantine empire.

Austrian history is mainly that of a family, the epileptic and unsavory Hapsburgs, who traveled further down the road of degeneracy by crossing with stock that resulted in imbeciles such as Charles II of Spain. Some of the things Austria can glory in consist in base ingratitude to John of Poland, by refusing him help after he had rescued Vienna from the Turks, fomenting, with

the Spanish church, the frightful thirty years' Bohemian war, and assisting France to steal the liberties of Mexico. The mixture of races in Austria is the most remarkable in Europe.

France descended from ancient Gaul mainly of Celtic origin. Its people passed through the stone age, fished and hunted as savages, occupied caves and rude huts, and to the fact that they and their descendants have been more wretched than other inhabitants of Europe may be referred many national characteristics. The people for ages were hounded, robbed and starved, not only by foreign foes but by domestic priests and nobles, until the result could be but defective, nervous, mercurial, obsolescing, happy-go-lucky and hysterical generations. Their existence was precarious, as one day there would be enough to eat and later the tribes would be suffering for want of food. The pastoral state was the next to follow, when flocks were owned in common, but there was occasional famine even then. The prevailing idea in owning soil in common referred to one tribe of Celtic Gauls agreeing to occupy land on one side of a stream and another tribe confine itself to another side. Some of the present day schemes relate to a return to such primitive methods as having land and goods in common; those who favor such notions seem unaware that all the other conditions of savagery must accompany such retrograde movements. Inevitably the rascal would appear who, under force or pretext, would own all the land, and the people also.

Succeeding this came the agricultural period, when sometimes crops were raised for tribes and sometimes for families. Slaves and women did all the work. The slaves were captives, unhappy, miserable, but the villagers were equally miserable, through the powerful gradually claiming ownership of all the land. The rich made the laws for the common people to obey and carry out, and the Druid priests constituted the court of final appeal. These French ancestry were composed of Celtic Gauls mixed with Germans and Romans.

The colonists and slaves guarded the fields after Rome had Latinized the Gauls, and the *corvées* fell upon the few, that is, these peasants who were forced to work for the nobles had also to provide for themselves, and all this was in the name of the

public interest. There were constant wars, and in 1030 to 1032 were three years of incessant rain, so that seed rotted in the ground and a most atrocious famine followed. Feudalism decayed under the communes of the eleventh and twelfth centuries, and intrigue gathered the dukedoms into the royal control and modern France was unified but was far from happy. In the sixteenth and seventeenth centuries royalty used and abused the communes, breaking their charters, taking away their liberties, their courage and hopes, and widening class differences. While in England parliament grew in power, there were only thirteen meetings of the French assembly, the states general, in five hundred years.

The royal court became a centre of corruption, full of sycophants, jesters, and knaves, ruled by bigotry and frivolity. Freedom of conscience or of anything was destroyed by civil war, oppression, banishment, bribery and massacre. One memorable slaughter of Huguenots was instigated by Catherine de Medici on what is called St. Bartholomew's night, 1572, to commemorate which the pope had a medal struck off, which later ecclesiasts are ashamed of and try to deny and suppress. François I invented the court with its degradation of savants into clowns, its fêtes, with courtier politicians, its immorality and dissipation. Lacombe¹³ tells of thirty thousand peasants in 1662 on the border of famine, without beds, clothing, furniture, reduced to skeletons, many women and infants being found dead on the road, with grass in their mouths, and villagers had not strength enough left to dig graves. A letter of 1683 from Abbe Grandet to the archbishop of Angers, mentions bread made of ferns and that many went three or four days without eating. The prisons were full and there was no justice, men treated those beneath them with ferocity. Fénélon wrote to the king: "Your people are famished, farming is abandoned, the villages and country are depopulated, France is a desolate hospital without provisions." And during all this time Louis XIV reveled in gluttonous, lecherous and drunken splendor, the vulgar ideal of a king.

In 1698, of 700,000 in Normandy, only 50,000 had bread, and most of Alençon were ferocious with suffering. La Rochelle lost

¹³ Petite histoire du peuple français.

most of its inhabitants from inanition. In Moulins the people were living like beasts. Most of Riom lived on walnuts, as the taxes deprived them of all else. In 1740 the Archbishop Masion wrote to Minister Fleury: "Our people are frightfully miserable, eating pearl barley bread which they are compelled to take from the mouths of their children to pay their taxes. In 1745 the Duc d'Orleans showed to Louis XV a loaf of bread made of ferns, and remarked: "Sire, see the food of your subjects."

June 14, 1789, the bastille was torn down by the infuriated populace, the royal prison in which so many legal murders had taken place, with the merest pretense of a trial, often with none. Rousseau and Montesquieu influenced a development of intelligence until the middle class proclaimed an assembly to give a constitution to France. Dupont boldly announced that the intention was to give a constitution based on a declaration of rights for all men, all times, and all countries. Lebon¹⁴ summarizes the declaration of August 27, 1789, to the effect that: "Men at birth are free and entitled to the same rights of liberty, property, security and resistance to oppression. Sovereignty is vested in the whole nation, and liberty consists in whatever does not injure others. The law may only forbid actions which are harmful to society, and is limited to the expression of the general will; it must be equal, for all and every citizen, either personally or through representatives, is entitled to assist in framing the laws." This declaration followed that of American independence, and covers much the same ground, suggesting many similar principles. The chief difficulty of present times is to arrange means to prevent the foxes and wolves of politics and superstition from undermining the effectiveness of such declarations by finding ways to defeat the wishes of the people and make and administer the laws in their own interests, thus repeating the old game of grab in new ways in spite of some growth of intelligence.

This declaration of the French people means that one set of men had set themselves up over all others; that these few arrogated to themselves the right to enslave, rob, oppress and destroy whom they wished, and these few made laws against the people

¹⁴ Modern History of France.

who had no voice in affairs. Old human nature inherited from animal nature stands ready to take advantage of the least chance to profit by flaws in laws, and of the impossibility of constructing means of protecting the rights of the people that rascals cannot find some way of subverting. Making a great parade and pretence of adhering to the letter of principles whose spirit they sneakily avoid, when they can make anything by so doing.

Spain and Portugal, the locations of the Inquisitions of the middle ages, the Holy Office, need not be mentioned. Everyone has heard of how in the name of the merciful, meek and lowly Jesus, multitudes have been tortured to death in such countries to establish priestcraft more firmly in the world, destroying both sexes of those who dared to think, who had brains developed, leaving only the trucklers, the double faced and bigoted, and the thoughtless and insincere to inherit and transmit, with inevitable decadence and extinction. The descendants of the Latins, the Portuguese, settled in Brazil, and the Spaniards in other parts of South America and the West Indies, growing hostile to their mother countries through the need of resisting oppression, finally separating from them though unable to establish permanent governments, as they are not far enough developed mentally to do so, except among a few. These are instances of the splitting off of tribes from parent stock, and final reorganization into new nations, hostility existing between parent and child. The tendency now appears to be for the older country to start its colonies out on a self-supporting basis and to refrain from robbing them as the Spaniards always did their colonies.

The great Slavonian nation of today is Russia, though its first rulers were Swedes. The Poles and Bohemians are the main western Slavs, but the Caucasus contains the greatest mixture of early Slavonian races with many other main families and tongues. The Bulgarians are also greatly mixed from remnants of Turanian and Aryan peoples who successively dwelt in that country. The Huns, a hideous Mongol people, ravaged Europe but were eradicated in the fifth century, and the Avars, a formidable Turanian branch similar to the Huns, occupied the sixth century with rapine and outrage, but were finally destroyed in the seventh century, the remnants of Huns and Avars becoming

mixed with renegade and conquered Slavs. Turanian consanguine marriages were bad enough, and sufficient to create a degenerate line of descent, but when, added to this, children in all stages of immaturity, as in India of the present time, would procreate, what kind of a result but an abominable one, could be expected? To such causes can be ascribed the stupidity notorious among some Hungarian descendants of ancient Magyars.

In 832 the Russian empire was founded by Rurik, a Scandinavian, Christianity was introduced in the tenth century, and in 1569 was the first encounter with the Turks. Then, from 1697 to 1704, Peter the Great was active in initiating civilization, as Voltaire says,¹⁵ in many ways except humane ones. Brutal, ferocious, cruel, he prided himself on his dexterity in cutting off heads. Poland originated in the tenth century, and became vassal to the German emperors. Sobieski rescued Vienna from the Turks in 1683, and was basely deserted by Vienna when in trouble himself. It has been claimed that ingratitude is a special Austrian trait, antedating this episode and coming down to the present. Poland was finally divided, Austria, Germany and Russia at different times snatching away parts, until poor old Poland is no more. In 1366 to 1405 the conquests of Timor the Tartar, or Tamerlane, in the orient, were extensive. He was a descendant of Zenghis Khan, who, with only 20,000 men, moving rapidly from place to place, slaughtered vast provinces and piled up cut-off heads in pyramids of hundreds of thousands, Catherine, the empress, 1725 to 1739, held her vulgar orgies, and Catherine II, 1762 to 1796, shamelessly held high carnival, such as the famous boodle county commissioners of Chicago tried to do at the county insane asylum, a comparison justified by such stock being closely related in animal disposition. In 1801 came the despotic Paul, suspicious, tyrannical, who was finally assassinated, and said to have been crazy, though not so much so as Ivan the Terrible, who merited his title. In 1812 came the burning of Moscow to repel the French army under Napoleon, which straggled back disorganized, insane, starved, cannibalistic, a mere remnant of the original invaders. This epileptic criminal degenerate Napoleon is adored by a lot of thoughtless admirers of

¹⁵ History of Charles XII of Sweden, Bk. I.

swagger, who are unable to read history aright. In 1853 and 1854 was the Crimean war. France and Russia quarreled as a pretext over the custody of the holy places in Jerusalem. The real issue was the desire of Russia to grab Turkey.

In an article by Andrew D. White on Tolstoy¹⁶, he mentions that after thirty-five years revisiting Moscow he found things but little changed, the same unkempt streets, beggars, sturdy and dirty, the same squalid crowds, crossing themselves before the images at the street corners, the same throngs of worshipers knocking their heads against the pavements of churches. The discussion of large public questions is not allowed in Russia, the press gives no news, and even correspondence and fireside talks have to be cautious. Fanaticism takes many shapes, there are many ghastly creeds, doctrines and sects, religious, political and philanthropic; one of which favors the murder of new-born children in order to save their souls, another enjoins the most horrible bodily mutilations for a similar purpose; others, still, would plunge the world in flames and blood for the difference of a phrase in a creed or a vowel in a name, or a finger more or less in making the sign of the cross, or of this or that garment in a ritual, or that gesture in a ceremony.

Nihilism assumes the right of any ignorant individual to sit in judgment upon the whole human race and condemn to death every other human being who may differ in opinion or position from him. Politically the Russians look upon the czar as representing God, and all the world outside of Russia as given over to Satan because it rejects the czar. These nihilistic and other theories are the outcome of original minds discouraged by the sorrows of Russian life, developing their notions logically, but never subjecting them to discussion, for so doing would destroy their value as authority. The Russian mind attaches no such value to reasoning as other people often do. Authority is the only way of receiving information, and as each crowd has its own special authority there is no chance for discussion; it would be regarded as insulting to propose it. Such conditions afford us an idea of the causes of general slowness of intellectual movements in Europe in the middle ages, as the lack of mentality at present in Russia

¹⁶ McClure's Magazine, April, 1901.

reveals what was a common stage of development among our ancestors.

Where for any cause one animal succeeds in leading the herd or pack, whether because it can reason best or is the strongest, the other animals follow and fear to dispute the right of leadership. Many such animals have grown so accustomed to being commanded by leaders who thought for them that the habit of deference to authority, instead of daring to reason for themselves, has been transmitted far down the line of descent to the middle ages of Europe and to the present time in large parts of Russia, with too great a remnant of survivors sprinkled through the so-called civilized world.

CHAPTER III.

THE SEMITES.

While Arya was yet benighted, fully ten thousand years ago, there was a Semitic settlement to the south, and a people called Sumerians, who had developed considerable culture. Semites and Sumerians lived side by side and borrowed and mixed their civilizations, and 3200 years later Sargon, in B. C. 3800, reigned in Babylon, where the culture of Chaldee was still Sumerian, but the king and his court were Semitic, and they Semitized the older civilization. The Sumerian continued to be the language of religion and law down to the days of Abraham, as the Norman language was that of the court in England after the conquest, while the Saxon was the speech of every day life.

Sumerians and Accadians divided ancient Babylonia between them. The Accads invented the picture writing which afterwards developed into the cuneiform. The great cities of Chaldea were founded by them and educated people learned the extinct Accadian language as we do Latin.

Hilprecht¹ unearthed 50,000 valuable records or tablets of Babylonian bricks at Nippur, the ancient Calneh of Genesis 10-10. When Abraham was about leaving Ur, the great library at Nippur was ruined by the Elamites, whose hordes were the inveterate enemies of the Babylonians, finally conquering Babylonia when Cyrus was king of Elam. Professor Hilprecht says that we can no longer hesitate to date the founding of the temple of Bel and the first settlements in Nippur between 6000 and 7000 B. C., possibly even earlier. This Calneh of the bible and Nuffer of the modern Arabs, is eighty miles southeast of Bagdad, in the Mesopotamian plain, half way between the Tigris and Euphrates rivers, a ruined city with rubbish piles sixty feet high. The earliest fixed

¹ Recent Research in Bible Lands, p. 47, and Sunday School Times, Dec. 1, 1900.

date in Babylonian history is that of Sargon of Akkael. Nabonides, the royal antiquarian of Babylonia, made a record of dynasties, through his excavations, extending back 3200 years earlier. Babylon was the first seat of civilization, and Egypt derived its civilization thence. Four thousand years B. C. there was intercourse between Egypt and Babylonia, the civilization of which reached Tyre, Sidon and Carthage. Its arts and business ideas spread over the world when Arya was nothing, and the Babylonian empire was old when Rome was rising.

Philologists group a Semitic speech family as consisting of I. Hebrew and Phœnician; II. Aramiac; III. Assyrian and Babylonian; IV. Arabian; V. South Arabian, and VI. Ethiopian, but this similarity of language does not constitute race nor a common origin. The term Semitic race was an unfortunately incorrect invention of Eichhorn.

The absence of wood and stone made brick the material of Babylonian superiority. Artificial lakes and canals, agriculture, navigation, astronomy, commerce, with gold and silver money, were theirs. Their rich soil, large river, the brick and the ship built up ancient Babylonia, and the writing tablet made trade secure. When Greece and Rome developed a high civilization derived from Babylon, the Teutons and Slavs were low in the scale of progress. Phœnicians were the medium through which Babylon taught the Aryans, who are really the heirs of the Semites, and even the plastic art of Egypt and later countries is from Babylon. In Sargon's time running writing, cursive script, had taken the place of hieroglyphics and pictographs, and with Sargon began the Semitic age. The Egyptian conquest partitioned Mesopotamia in 1600 B. C., and vassal Arabs of Egypt sat upon the Babylonian throne. Upper Babylonia was too far from Egypt, and so was able to remain independent. Mesopotamia was reunited by the overthrow of Egyptian control in 1400 B. C., but though Babylon had her own kings, they were satraps of Assyria, whose capital was at Nineveh.

The inventors of the cuneiform system of writing had been a people who preceded the Semites in the occupation of Babylonia and who spoke an agglutinative language utterly differing from their Semitic successors. These Akkadians left much literature

which was highly prized by the Semitic Babylonians and Assyrians.² The Semitic scribes improved upon the Sumerian writing. The Chaldeans settled at the mouth of the Euphrates, a fertile region like the Nile. In 2,160 years 46 miles of land have formed between the Persian gulf and the former mouth of the river, and Eridu, a seaport town dating to 6500 B. C., is now 130 miles inland from the present coast. Nippur still farther inland on a canal between the Tigris and the Euphrates rivers, was the chief sanctuary and religious center of the civilized world. Nippur, Ur and Eridu were the three earliest cities of ancient Babylon. The Sumerians preceded the Semites in city building. The Babylonians were a mixture of races, according to Berosus, the Chaldean historian, and their country was won from the sea as prevailing accounts stated, which would also parallel the spread of the Aryan race down the Oxus river as its valleys were created by the fall of the ancient ocean.

The rule of Sargon extended to the island of Cyprus, and his people, a compound of Sumerians, Semites and Elamites, left enduring traces on West Asia and the world through the inclination races have to intermix. Racial intermarriages produce superior offspring often, though it would be out of our power to affirm that any race has not mixed with another at some time.

Irrigation for agriculture necessitated engineering and the nearness to the sea gave impetus to trade with southern Arabia and Egypt, so there were surveyors, merchants and sailors as well as farmers.

The absence of stone from the country and the expense of papyrus led to writing upon clay tablets which were often baked to make the record permanent. Originally these inscriptions were mere pictures of objects imperfectly conveying their meaning, but these in time changed into wedge shaped marks in regular lines from right to left; what were formerly curves in the pictures were changed to angles and finally the writing was simplified by omitting as many marks as possible, and in this way the Babylonian writing evolved. These cuneiform characters were as numerous as words and were committed to memory by the children of that day. They were also taught to use dictionaries, grammars,

² A. H. Sayce, *Fresh Lights from the Ancient Monuments*, Ch. I.

reading books, mostly Sumerian, exercises, history and geography, poetry and prose. A superstitious reverence for names was drilled into the people at all ages.

The fertility of Babylonian soil was such that grain returned 300 fold when planted. Wheat and barley with other cereals were raised in great abundance. The patriarchal and matriarchal principles struggled for supremacy, in which the father and mother took precedence.

Sarzec found 32,000 tablets in regular order in the southern part of Chaldea where they had been placed about B. C. 2700. Some of the tablets had writing so small that it required a microscope to read the characters. In the British Museum is a magnifying glass found by Layard at Ninevah and it was therefore presumed that the Assyrians sometimes used such means of reading and inscribing minute writing. But this rude instrument does not indicate much optical knowledge or skill in those far off times.

A lot of false sciences existed in those days and the records upturned and deciphered pertain to history, chronology, geography, law, private and public correspondence, despatches from generals, royal proclamations, lists of bears, birds, insects, stones, stars, and other natural science matters, writings upon philology, astrology, theology, omens, poems, with deeds, contracts, legal decisions, inventories, stored in ancient libraries of Assyria and Babylonia. The museum of the University of Pennsylvania contains many of these records and among them are 730 tablets found by the Peters and Hilprecht expedition at Nippur over the site of the former royal library, which proved to be the business documents of some merchants named Marashu Sons, shrewd Semites, subjects of Artaxerxes and Darius II, during the fifty years between B. C. 464 and later. Their clients were Semites, Persians, Greeks, Medes, Judaens, Sabaens, Edomites and others. The boundary between Babylon and Assyria dates B. C. 1450, and Shalmaneser I reigned about B. C. 1300. The first known priest-king or patesis of Asshur is assigned to B. C. 1800. The Assyrians excelled in the ferocities of war but not in the arts of peace.³ Assyrian chronology is definitely settled as between B. C. 1330 to B. C.

³ Z. A. Rogozin, *Medea, Babylonia and Persia*, 1898.

620.⁴ The Assyrian then rose to pre-eminence in western Asia till in after centuries they yielded to the new Babylonian regime founded by the Chaldeans from the shores of the Persian gulf. Babylon seemed to have recovered the upper hand from B. C. 1060 to 1020, but the second Assyrian empire regained control and armies overran the region from the Caspian to the Persian gulf, and from the tenth to the seventh centuries B. C. the Assyrian supremacy was vast and formidable and then suddenly ceased through the treachery of a general, who was sent to quell a Babylonian insurrection, making himself king of Babylon and conspiring with his former enemies to overthrow Assyria.

The Persians, who must have been mixed Aryans and Semites, were first mentioned by Assyrian kings in the middle of the ninth century B. C. They were found in southwest Armenia in close contact with the Medes. The Persian empire began about B. C. 550. The Medes and the Babylonians combined in the seventh century B. C. to overthrow the Assyrian power.⁵ Cyrus the Great who was king of Elam B. C. 549, became king of Persia in 546 by the overthrow of Babylonia, Media, Persia and Lydia. The Elamites had previously, thirty to twenty-two centuries B. C., destroyed Babylonia.

According to Simcox Akkad was non-Semite and the language had affinities with the Chinese, and the speech of the founders, the Sumerians, of the Mesopotamian civilization was akin to that of the Turks, an intimation that the non-Aryans who preceded the Babylonians were Turanians. The mixed Sumerian and Semite language was brought to the Mediterranean shores and to Egypt in the earliest days of Egyptian history. The Euphrates like the Nile had annual inundations and occasionally it would appear that many of the overflows were like those of the Oxus of old and the Yellow river of China of the present day, sweeping whole populations before them. The empire of Sargon of Akkad extended from the Persian gulf to the Mediterranean, beyond this the first dynasty of Ur had to keep up perpetual warfare with the Semitic tribes of northern Arabia, Ki-sawa, the "land of the hordes," as it was termed by the Sumerians.

⁴ E. A. W. Budge, *Babylonian Life and History*, Ch. III.

⁵ L. von Ranke, *Universal History*, Ch. III.

The first Egyptian dynasty is placed at B. C. 4777 and the nineteenth at B. C. 1327 by Petrie. The culture of primitive Egypt is derived from Chaldea and the language of Egypt is a Babylonian mixture of Sumerian and Semitic.⁶ There are wall paintings along the Nile valley representing antique races of brown Copts, black negroes and white people, very likely the founders of the Egyptian peasantry who have reverted to the characteristics of the least intelligent of their ancestry. At Kop-tos on the Nile the ruins date back to B. C. 5000, with mention of a period 500 years earlier. Mud deposits at the mouth of the Nile are calculated as dating back to 8,000 years ago. Cretan explorations show intercourse with Egypt about 2000 B. C., with clay tablets like those of Babylonia, but with two kinds of script, one of which is linear and the other is half pictorial. The money of ancient Egypt resembles the ring money of the ancient Babylonians and that which was current among the Celts in Ireland as late as the twelfth century after Christ, and similar to what is still in circulation in the interior of Africa. Each people may have originated the ring money separately, in some few cases learning the idea from others.

Simcox speaks of Egypt, Babylonia and China as the three great seats of archaic civilization⁷ and mentions the fertility of the soil, abundance of food, ancient and modern abuses, mainly such as occur everywhere in the weak being oppressed by the strong. Agriculture and cattle farming were highly developed, the administration being through stewards. The Egyptians had the institution of slavery as well as had other nations, the origin being in captives and their descendents being compelled to work for their captors. Practically the entire population was enslaved for the ruling classes absorbed the labor of the peasants without recompense, and these miserable creatures submitted to endless abuse; starved, naked, beaten, murdered, they were set gigantic tasks by their masters. The great temple of Karnak and the pyramids designed by Babylonian engineers for the Egyptian priests and kings were piled up by brute strength; thousands of human

⁶ A. H. Sayce, *Recent Discoveries in Babylon*, *Contemporary Review*, Jan., 1897.

⁷ E. J. Simcox, *Primitive Civilization*, 1894.

cattle pulled and pushed stones up inclined planes of earth hills they had previously built and afterwards removed; this simple explanation disposing of the mystery of these vast constructions, none of which is as wonderful as our modern engineering or architectural works except to the emotional unreasoning worshipers of things ancient merely because they are ancient, such as Piazzzi Smyth and his class. The Egyptian rulers were anxious to save their souls by preserving their bodies till the judgment day, the superstition being that the soul was lost if the body decayed. It mattered nothing to the kings how many common souls were destroyed in saving their royal carcasses, and the spirit of this sort of "other-worldliness" prevails today. Another survival from such crude times is the idea that God is a big man, the Egyptian gods and kings were all sculptured as giants while the common people were represented by small figures. The misery of the lower classes of Egypt is detailed by Maspero.⁸ British Museum papyri dating to the thirteenth century B. C. contain caricatures of Rameses III who was not liked by the intelligent classes for his vanity, egotism and lack of tact. He had placed a vainglorious record of his victories over people south, east and west. A caricature represents him as the king of rats in a chariot drawn by dogs, scaring a fortress full of cats who beg for mercy, a sarcastic reminder of his lying boasts of having conquered stronger and better races.

W. M. Flinders Petrie judges from the pictures of ancient men and women with full foreheads and aquiline noses that in the early man of Egypt we had to deal with an European race more or less mixed with the negro. He says that there are 9,000 years unbroken in chains of events in Egyptian history and yet we are far from the beginning. There are traces that civilization must have come in from another country with copper and fine work in flint and stone and good pottery. In the earliest graves figures of a race of the bushmen type were found similar to those found both in France and Malta suggesting that the race may have extended over Africa into Europe. There were figures of captured women from the earlier race which was probably paleolithic. The climate was totally different from what it is today, and the rain-

⁸ Dawn of Civilization, p. 339.

fall fertilized what is now a desert, and animals of which all trace is lost inhabited the country. Petrie places the age of Abraham after the XII dynasty of the kings of Egypt. Pottery of the Greek pattern was found in the tombs of Egyptian kings of the first dynasty, which proves civilization on both shores of the Mediterranean at the same time. The Exodus was during the XIX dynasty and Shishah early in Jewish monarchy in the XXII dynasty of Egypt. Among the important dates we have B. C. 4777 for the first and B. C. 1327 for the nineteenth dynasty. Early records at Koptos B. C. 5500; Crete traded with Egypt in B. C. 2000; the Egyptian conquest of Mesopotamia B. C. 1600; Ramesses II B. C. 1330; Egyptian conquest of Persia B. C. 525. Brugsch dates the founding of the great pyramids of the Hyksos in Egypt at B. C. 2200 to 1700, and the period of greatest imperial power in Egypt as B. C. 1750 to 1250.

At present the lower classes in Egypt are increasing at a rapid rate under the English protection. The improvements introduced into Egypt by the English government enables a larger population to live, the new dams of the Nile save water to fertilize wide plains and the average peasant is enabled to have more wives and cigarettes as well as better food in abundance. Thus human vermin increase under favorable circumstances, but bad times may kill off millions of these simple folk, as when famine wipes out hosts in India and the Yellow river changes its course through a populous country and drowns out villages and plains full of mongols, and with animal shortsightedness the Chinese chop off all the trees on a mountain range causing a failure of the rains and several million pig-tailed lice perish as ants and rats do from mishaps of nature.

The Hebrews are the first mentioned as living near the Babylonians and were classed with them as Semites because of similarity of language. They were pastoral in the fertile plains of Goshen and occupied the north of Egypt under Pharaoh, but they mingled little with others and kept their own Israelitish manners and customs, and like every other race believed in their own superiority. They traded for ages and had a written language and resembled the Assyrians in many ways. They never developed as farmers or soldiers nor sailors, hence they were easily con-

quered and scattered, but they had great mercantile ability. S. L. Clemens suggested that their superiority in trade of both honest and dishonest kinds excited the envy of all their neighbors and accounted for their being in disfavor and the pretexts, religious and otherwise, to rob them. The hostility and persecutions they encountered date further back than the Christian era. Even where they mixed with other races the Jewish peculiarities remained prominent. Oppenheim⁹ shows that in the modern Jews there are the traces of their wanderings in resemblances to the tribes with which they mixed, Slav, Teuton, Iberian, etc., "while in the streets of New York one may easily recognize skulls and lineaments as clearly ancient Assyrian as one can possibly hope to find."

The Lydians who were conquered by Greece in B. C. 1000 were an allied Semitic people of the west coast of Asia Minor. Modern approximate dates for Hebrew chronology are Mesopotamian pastoral tribes B. C. 7000; Abraham B. C. 2000; exodus from Egypt 1200; David king of Hebrews 1000; Saul king 1055; Solomon king 933; Jerusalem captured by Egypt 949; Hosea king 734; Nebuchadnezzar takes Jerusalem 597.

Phoenicians as far back as B. C. 3000 occupied Greece and the Aegean islands. Their civilization was from Egypt and Babylonia.¹⁰ They were mentioned by Herodotus and Pliny with the Canaanites at about B. C. 2400. Amorites overthrew the Hittites B. C. 1300 and a reaction took place in the cities of Phoenicia. Slave dealing, money trading and mining were the chief industries, which did not prove to be moralizing influences.¹¹ Phoenicia became subject to Assyria and Babylon B. C. 850 to 538. The Etruscans were supposed to have been Phœnicians like those of Carthage and Marseilles who were driven from their original home.¹² About B. C. 2000 Semitic immigrants from the East began to supplant the Phœnicians in Syria. Rawlinson says that the "father of history" assigned their origin to the Persian gulf,

⁹ The Development of the Child, p. 69.

¹⁰ D. G. Hogarth, Authority and Archæology.

¹¹ Rawlinson, History of Phœnicia, Ch. XIV.

¹² F. Haverfield, Authority and Archæology, p. 305.

and Renan also derives them from this region.¹³ Their migration may have required a century. Rawlinson includes a period from the fourteenth to the fourth century B. C. when they dwelt in Syria during which all Mediterranean and eastern countries came in contact with them; they were hardy mariners who visited all shores between India, Spain and Britain, which last named place they discovered. Their religious rites were cruel and licentious and like the early Norsemen they were often pirates. It need not be supposed that the Druids and Norse learned their cruelties from their Phoenician visitors for such traits are common heritages of all mankind from our animal ancestry, remaining with us in all degrees of intensity.

¹³ *Histoire des langues semitique*, II., 2, p. 183.

CHAPTER IV.

THE MIDDLE AGES.

When history repeats itself it is usually because the same old causes operate, the same old animal ferocity, greed or fear during age after age give us the same old results, and while modern nations are actuated largely by the motives of their ancestry in disguised, refined and complicated ways, it seldom occurs to us to analyze events on the basis of what is inherited from not only primitive, savage people, but from even more remote predatory and hunted animals. The behavior of tribes of barbarians closely copies that of a wilderness full of apes, and civilized nations too often are barbarous in their notions and doings, especially when checks upon actions are removed. The Middle ages were not worse than preceding periods but there have come down to us records from those times less confused with fairy yarns, such as abounded in the tales of earlier days when few knew how to write or even observe properly. Stripping away the exaggeration and glamor associated with the Roman achievements we can have a more intelligent grasp of such and other events through glancing at the caperings of troops of monkeys or by fancying what great bands of the anthropoid apes, like the gorilla or chimpanzee, would do were they more gregarious. Many wild beasts follow the leader who is most powerful. Packs of wolves can be readily divided between the strong leader and the passive led, with an intermediate few who are jealous of the leader and who conspire to destroy him. Gibbon begins his renowned history with the beastly antics of the degenerate son of the complaisant Marcus Aurelius and dissolute Faustina. This son, Commodus, after inexpressible excesses, was poisoned by conspirators, and the attempted reforms of Pertinex infuriated the corrupt soldiery. They loved war, rapine and license, the plunder of provinces, the bribes of officers, the capture of matrons

and maidens. After killing Pertinex the hundred thousand soldiers held in subjection ten millions of unarmed people. A standing army places any nation at the mercy of a general. There are two factors, however, that operate more in modern times to annul this danger, one is the higher animus of the average general rendering him more likely to be loyal, and the other is the lifted plane of intelligence of the people, until as was recently attempted, conspiracies to exploit honors and prize money by a naval and war office ring were only partially successful. The Pretorian guard of the Rome of the second Christian century with its sixteen thousand sufficed to overawe the four million people, the passive citizens of Rome, and through the senate to control an empire of a hundred and fifty million. The soldiers sold the throne to the highest bidder, Julian, but the absent victorious armies had to be heard from. Severus with twenty thousand men from across the Adriatic, Clodius Albinus with a similar force in Britain, and Pescennius Niger with an army greater than both, in Syria, each declared an emperor and marched to Rome to enthrone him. Severus outwitted them all, after battles in which kindred were slain by thousands; on his deathbed he advised his sons to enrich the soldiers at any price and to treat the rest of the subjects as ciphers. Caracella killed his brother Geta and twenty thousand of his friends and was murdered in his turn by a soldier, whereupon the army selected a new emperor, Macrinus, this being the method of divine choice of rulers. Upon his attempting to make the least change for economy sake in army affairs he was promptly removed by death, as promptly as an honest office holder would be suppressed today by Tammany. Elagabalus, the high priest of the sun, the pontifex maximus and emperor, with his gorgeous tiara entered Rome, conspiring with the soldiers to be divinely selected, and rioted in imperial wealth and power with grossest dissoluteness. Rome sickened of his beastliness and after killing him the senate passed a decree consigning his name to eternal infamy. The guard elected Alexander Severus, who tried to make many changes for the better, but the soldiers expressed their dislike of reforms by killing multitudes to teach the new emperor his place, and finally killing him they raised the giant baboon Maximin

over themselves. He robbed his own temples in his greed and even his rotten priests and army could not bear his cruelties, and as he was marching to quell a revolt in Rome the soldiers killed him and accepted the two rulers named by the senate, but soon killed them off and set up Gordian, who was poisoned by Philip, a general who conspired to take his place, but the Danube army repudiated this choice of the Persian army and elected Marinus, one of their own generals. Philip sent Decius to use his personal influence with the Danube army in his behalf, but that army compelled Decius to accept the post of emperor and repudiated Marinus. Decius routed the army of Philip and cut his head off. The Pretorian guard welcomed the new sovereign who had so many legions behind him. In A. D. 250 the northern barbarians defeated the Roman armies and the senate chose two emperors on the death of Decius, one to remain at Rome as civil governor while Gallus was to be military emperor; the civil governor died suddenly, Gallus was murdered by the senate, and it appointed Emelianus. The Roman empire at this time encircled the Mediterranean sea. Emelianus was killed by his soldiers and Valerian was selected and a march made to repel the Persian invasion while his son Gallienus tried to keep out the Franks who overran the country: Valerian was killed by the Persians, Gallienus was inefficient and cruel and was finally assassinated. The population of Rome decreased one-half by wars, pestilence and famine, while different bands of the army were incessantly electing new emperors, thirty candidates at one time being fought over. Claudius succeeded Gallienus and died trying to head off the Goths; Aurelian, his successor, vanquished them, but he was killed by his own officers. For two centuries out of a great number of emperors only three or four died a natural death, the good and bad alike were doomed to a bloody end. The eight months when Rome was without an emperor were the best the city had at that period. Tacitus was compelled to be emperor and was murdered by his soldiers; Probus was chosen and was also killed by mutineers and the army elected Carus and killed him, then selected Carinus and Numerian, the two sons of Carus, as emperors. Numerian died and Diocletian, a slave who succeeded Carinus at Rome, set out to fight Diocletian and was killed

by a general whose wife Carinus had seduced. Diocletian selected Maximian to help him, Diocletian to be the head and Maximian the sword. They abdicated and at the time of Constantine there were six emperors. The east provinces took Licinus and the west Constantine, who put Licinus and 34,000 of his soldiers to death. Constantine being sole emperor concluded to fortify himself by making the new Christianity the state religion, but he was not baptized in that faith till on his deathbed. His three dissolute sons divided the country between them, barbarians flocked from all quarters upon the Roman garrisons, Picts and Scots rushed down upon Britain, Gothic tribes ravaged the Rhine and the dynasty of the Goths in Rome followed. The new church copied the former civil power in its organization, bishops and priests filling the places of mayors and aldermen, the bishop of Rome being the highest governor, assuming the title of supreme pontiff or pontifex maximus, the great bridge priest who sacrificed to the river gods; later the term pope was adopted, which is the Italian papa, the Greek church calling all their priests by that name, the equivalent of father. The first three hundred years or more of the Christian era may be said to have belonged to pagan Rome when Jupiter was the chief god, then comes a thousand years in which the Christian empire went to pieces and would have been forever ended but for the barbarians of the north having adopted the ideas of Rome after those ideas no longer influenced the place of their birth. So during the thousand years when both pagan and papal Rome sank to insignificance the Frankish kingdom grew in what are now France and Germany, and Charlemagne, the Frank, became supreme in Europe. Pope Leo III was driven from Rome by its citizens and fled to the Franks for aid, and was restored to his pontifical chair by Charlemagne who, in the year 800, was rewarded with the title of emperor of Romans, adding the extra head to what is now the German eagle ensign. The emperor Charlemagne ruling while the pope confined his control to spiritual affairs, an arrangement which never lasted with succeeding governments any longer than priest or king, one or the other, could grab both offices.

George Burton Adams¹ begins his summary of the middle ages at the time of the fall of the Western Roman empire because it is the point where all the main forces of our present civilization are at last together on the stage, and he closes with the reformation because it is the event that brought the middle ages to a close. Through Rome learning from Greece and that country in turn from Egypt and Phoenicia, the best of Semitic thought and art came into Europe. Rome contributed her science of law and government and furnished the imperial church, and when German vigor was added to all it is apparent that our modern civilization comes from Greece, Rome, Judea and Germany. There was but little gain in civilization between the fourth and fourteenth centuries, the work of the middle ages was assimilation, as an animal gorges before waking to new activities, or fallow ground prepares for productiveness. The people were barbarians without state or nation, the darkness of ignorance made anarchy and insecurity everywhere. The notions that had gone forth from Rome gradually did their work, especially the arrogant idea that Rome was destined to rule the world, that the ancient gods would triumph, and this conceit outlasted ancient Rome, and was resurrected in Christian Rome and spread northward as Rome was again perishing, and the hypnotic suggestion, the constant iteration, the oft told tradition did its work in connection with other propitious matters, so the Holy Roman empire was created with fire and sword. Middle age thought and reason could not conceive of empire apart from Rome, at least it satisfied the poor intellects of the time and explained the operations of Charlemagne. At first the priests were mere teachers and exhorters, many of them following common trades, but they grew in importance with success and set themselves up as mediators between God and men, and found the new business profitable. Of course the profession increased, as easily earned rewards attract those who would escape work, though there were many sincere priests in all ages and religions. Membership in the church came to be regarded as necessary to reach heaven, faith did not count for so much as ceremonies and gifts. A political

¹ Mediaeval Civilization.

organization was the most natural so the monarchical church arose, and with it came the old spirit of conquest. When the Visigothic king sacked Rome in 410 heathenism perished and its supporters were penniless, the pope became important, the rise of the Carolingian family in France and its alliance with the papacy was another step, and some confiscated lands began its temporal power. It seemed necessary to the profit sharers in the new religious organization to prove a far off divine origin for their church, so what are known as the pseudo-Isidorian decretals were forged to deceive the people into thinking that the church had not grown up naturally from small beginnings, as things everywhere usually do. They were gotten up in the eighth century to support the papal claims to the right to rule the world; one paper was a pretended edict of Constantine granting to the pope sovereignty over the west, and there were fabricated letters and early papal decrees, and these forgeries are full of mistakes about historical facts and dates, depending upon the ignorance of the people at that time to escape detection.

In pagan Rome the religious officials consisted in six augurs, who claimed to be able to tell events by observing the way that birds would fly, and the auspices ascertained the will of the gods regarding undertakings by divination. The most interesting and finally most important official grew out of the five bridge builders or pontifices who built, or destroyed in case of invasion, the bridge over the Tiber.

These pontifices were the Roman engineers who understood numbers and measures so that they were employed to calculate the calendar, proclaiming the time of the new and full moon, the days of festivals, such as the shortest day of the year, for which finally Christmas and New Year's day were substituted, though such days are merely near to the shortest day. The pontifices saw that judicial and religious acts took place at the right time and gradually they acquired control of Roman worship. The president of their college was called the pontifex maximus, and that is the term applied to the Roman pope. These bridge builders called their knowledge "the sum of all that was divine and human." Let a parcel of functionaries have control of the little knowledge of their time and like the coal barons of America

they squeeze the common people out of all that their "corner" enables them.

Monasteries were founded upon the idea that sure rewards in heaven would follow upon giving up the world and living in seclusion and privation, often the monasteries became mere garrisons to enable newly acquired lands to be held in subjection. Civilization owes much to the monks for they often taught farming to the barbarous people and started manufactures among them, the poor were helped, and monastery walls were frequently places of refuge against war and oppression. They were often the sole places where order and quiet survived. Many books were preserved in the monastic libraries which must otherwise have been lost, and many were the manuscripts laboriously copied by monks, which they frequently could not understand. Schools were sometimes connected with monasteries and the renewed learning and science of Europe took its first feeble steps under the guidance of the monks. Falling inevitably into corruption the system was as often purified by earnest reformers who, of course, were made to feel the penalty of having tried to benefit their fellow men. And, as Adams says: "Very often during these centuries of darkness there lived on under the sackcloth of the monk, after they seemed driven from every other abode, the principles of a genuine Christianity, the practice of its real virtues and the living of its real life."

Rome could be likened to a pot into which ideas from many lands were put to be cooked and eaten by later guests, often the ideas were half digested, but they served to keep alive intellectuality which would have perished otherwise. It has also been claimed that had Christianity remained the pure and spiritual religion of its early days it would have been swept out of existence by the barbarians, but Christianity had already become corrupted before the influence of the barbarian races began to be felt, it may be said to have sunk to the level of savage comprehension, the ceremonies, knaveries, appeals to fear, sales of forgiveness, etc., being what simple intelligences think they can understand, but while a system can become rotten often there are votaries who are sincere and who long to make things better, the priest was often a protecting and restraining power for good,

while those in charge of the general policies of the church were utterly unprincipled; ecclesiasticism was not Christian, it was Romanism of the traditional kind; when most corrupt the church hypocritically but usefully held up in theory the standard of morality, which its bishops and many of its priests did not practice. The notion gradually gained ground that the moral law was binding upon all, though to this day the anthropoids think that royalty and high church dignitaries are exempt. From out of the middle ages came the idea that the individual could be free, and that the state is for the people, contrasted with the older notion that the individual existed only for the state; the equality of all men was discussed while slavery was favorably regarded because intelligence had not developed sufficiently to oppose it, nor did the church as such put forth any of these advanced thoughts, it was either here and there that some earnest priest exceeded his authority and dared to stand up for truth as he saw it, and probably be punished for his pains, or outside of the church ideas would grow often in spite of clerical opposition, and finally when no longer possible to oppose them they would be adopted in some form and then the claim be made that the church had originated them. This has been the case with monogamy, anti-slavery, morality in general, when in reality all such matters were forced upon church teachings often with the utmost difficulty.

The Goths and Lombards were Christians before entering Roman territory, but they were Arian Christians, a sort of Unitarian belief, regarded as heresy by catholics; the Franks were rapidly converted to Christianity, but the Saxons required a century and a half. These savages brought into Rome their free political governments, their public assemblies for the making of laws in which every freeman had an equal voice, and it was long centuries before Roman influence corrupted and ruined the ideas of German liberty, but in Saxon England those germs of liberty grew into the free government which America inherited and which the world is gradually being taught. The present Germans have a Romanized system of jurisprudence while England derived her laws from ancient uncorrupted Germanic principles.

The Merovingian kings, the sons of Clovis, fought among themselves. With the rise of the Carolingians and the splitting of the Frankish kingdom, Austrasia widened into the Germany of later history and Neustria grew into France. Merovingian became a reproach as equivalent to lazy and worthless, and Charles Martel and his grandson Charlemagne founded the Carolingian rule. What was known as the Iconoclastic controversy occurred through the patriarch John removing pictures from the church of St. Sophia in 712, Constantine opposed this while Leo in 726 made an edict commanding all images except the cross to be taken out of the churches. As the images brought money to the priests and monks they induced the people to revolt. Gregory the first and second led the revolts, and massacres followed. The church was split between those who worshiped and those who destroyed images. Leo IV being poisoned by his wife in 780, images triumphed. A certain class took middle ground to retain images, but not to worship them. Charlemagne was not pleased with the Nicene decrees restoring images, so in 790 he caused books to be written against them, but the pontiff did not favor his ideas. In 794 Charlemagne called a council of 300 bishops at Frankfort on the Maine and the council passed a rule forbidding the worship of images.

The more intelligent church people nowadays say those images are merely emblems and are not worshiped, but the ignorant bulk of the devout do not understand such refined notions.

Communication was difficult and far off lords did not even know who their kings were at times, so centralization was imperfect. Security was the first thing to maintain and Charlemagne arose to give expression to the desire for unity and peace in Europe. He tried to revive learning and introduce general education, but the times were not suitable and even his own ideas were the narrow ones of the period, showing that a potentially great mind may be stunted by the environment. In England Theodorus in the seventh century, and Alcuin, the great scholar of the day, kept alive the sparks of learning. Their ideas impressed him to cause the clergy to teach the people. Disrupting forces were too strong and centuries of confusion followed the death of Charlemagne. Germany and France separated, and by

the tenth century the separation was final by differences in language and feeling, but the German kings were truckling to Rome like the moth around the candle, till German unity was split into numerous fragments and lost for long, terrible centuries. In what is now France the German conquerers identified themselves with Rome and under Hughes Capet in 987 began the feudal system which the kings fought unavailingly. It enabled a temporary means for civil order, a transition to better times. Society was disorderly, disorganized, fragmentary. A feudal system is adapted to low intelligences, incapable of combining for mutual benefit without being compelled to do so through some lord who takes advantage of their ability to prey upon others for his own gain, while incidentally preventing them from robbing and destroying each other, because he would lose their services and not the he cared for their welfare. Later from habit and convenience they refrained from cutting each other's throats and after many centuries they are beginning to feel the nonsense of not respecting the lives and rights of strangers and foreigners. Modern public charities are dispensed by feudal political organizations like Tammany. The feudal system in anything and anywhere proclaims selfish indifference to the common welfare, though a keen desire to avoid harm to self may exist, the average anthropoid being unable to realize that by compelling respect for the rights of all his own rights will best be secured.

Russia and other parts of Asia still live under the feudal methods which began to be relinquished in Europe about the tenth century. The system originated by some one, who was strong enough to do so, grabbing the lands and charging the others for their use. The small proprietor often gave up his estate for protection. In Gaul these practices ran to extremes and the chiefs begrudged the very air their dependents breathed because it could not be taxed. As a rule some one feudal chieftain would prove to be strong enough to lord it over the others within convenient distances and we see the evolution of a king. Circumstances here and there gathered kingdoms under an emperor with the whole fabric breaking down and rearranging on new lines with other titles, but all amounting to the same old game of grab. The king owned the kingdom and gave fiefs to

nobles who fought for him, and they parcelled out their fiefs to vassals and so on down to the knight's fee. The lord could do anything that governments do today, make war and peace, coin money, give charters, take life and make servants of whom he pleased. Feudalism is called the protest of barbarism against itself and is the natural next step after anarchy. Feudal castles afforded both protection and danger to friends and enemies, as much to one as to the other often. Toward the last these castles came to be hated as the strongholds of wrong and oppression. The Greek and Roman idea of the state being the owner of the people led to fearful abuses in France by the feudal lords, while the German idea of the state being a mere creature of the people saved the Germans and English from the worst effects of that system. Feudalism modified by inherent democracy of old English institutions, daunting the lords and kings, never degraded the English as it did the French or Germans. At this time England and America are the least oppressed by developed conditions, while Germany surrendered too much to Roman corruption of her original ideas concerning liberty.

The papacy became the prize of town broils and the gift of harlots, but Hildebrand, who became Pope Gregory VII in 1073, was a man of intellect, superior to most of the popes. He organized the church into an absolute monarchy and secured the present method of selecting the pope by the cardinals and established celibacy of priests. His reforms kicked him into exile.

The crusades followed to rescue the tomb of Christ from the infidels and the Turks still have it. But the crusades got people into the habit of travel, got them over their ignorance of foreign places and people, liberalized them in spite of the clutch the priests still attempt on their brains. Commerce grew out of this and developed between Europe and other countries until it pushed into India and China, the chief cities of Asia were visited, and Mongols appeared at European courts.

The crusades helped to do away with the feudal system, as many nobles sold their lands to go crusading and the isolated life of the castle gave way to the grab for the brilliance of court life. The crusades also did much to give impulse to learning, to awaken thought and increase intellectual activity. There was

a vast literature of the lives of saints and martyrs; the false decretals were a typical product of mediæval times, exhibiting dense ignorance and mistakes that the school boy of today might detect, the product of such low cunning as ward politicians exercise, especially when in control of such helpless beings as the insane and the public funds for their care. Scholasticism arose from absence of a study of facts and from deference to authority such as Aristotle; the childish intellect of the middle ages was forbidden to develop, to think, it was fed upon superstition and commanded merely to obey and hand over its earnings. In Italy, Manzoni says, bravos organized with impunity, untouched by proclamations, for churches and palaces were their asylums and for hundreds of years they laughed at opposition. Knights-errant clad in steel wandered safely among pedestrians, burghers and villagers, who to repel their blows had nothing on them but rags. "Beautiful, useful and sapient profession!" The most embarrassing of all conditions in those times was that of an animal without claws or teeth and which nevertheless had no inclination to be devoured². The Buonaparte family of Florence and later of Corsica descended from lords of Monte Boni, freebooters, who took toll from all on the way to Rome till the Florentines destroyed their fortress because they could not endure that another should do what they refrained from doing³.

The ruins which travelers find so interesting along the Rhine and in various parts of Germany and France are those of the strong fortresses built by feudal lords during these troublous times. The necessity which caused them to be built no longer exists and most of them are crumbling to decay. Indeed, in the eighteenth century many of them were attacked and demolished by the descendants of the peasants who had cheerfully assisted in building them. When they were built they meant safety to the cultivators of neighboring lands. Centuries later, when social conditions were changed, they seemed to the peasants merely the emblems of oppression.

The feudal baron outrages and tortures even in England

² A. Manzoni, *I Promessi Sposi*, p. 493.

³ T. A. Trollope, *History of the Commonwealth of Florence*, Vol. I, p. 50.

were bad enough as described by Green⁴. They were almost as bad as those of the Spanish inquisition. Knight errantry would produce lawlessness in one country and combine to check lawlessness in another country. Romances describe the better qualities of knighthood, and ascribed to the knights imaginary virtues and prowess; the old trick of ancientism. Nestor makes olden heroes superior, and Homer gave the strength of four men to each of his favorites of Troy.

William of Normandy broke down the earldoms and repudiated the claims of Rome. He protected the Jew because he was useful to him. The citizens held in England very different relations to the feudal nobles, and William took care to make himself supreme over them. The struggle later in England was not like that on the continent, a struggle by kings to win back power from their vassals, but it was a struggle of the barons to win rights and privileges from the kings, and the natural allies, therefore, of the nobles were the citizens.

Bandits are in the Caucasus, and the Kurds still ravage Armenia, and not long ago bandits were in the Scottish Highlands, and wherever Spain rules there are ladrones. In the eighth and ninth centuries the piratical spirit of ancient Greece revived among the fierce Danes and Norwegians who led a life of constant rapine and bloodshed, interminable warfare at home and frightful devastation abroad. Amusement consisted in tossing infants to be caught on spear points, reminding us of what the European soldiers were accused of in the recent Chinese campaign. It became popular among some wild Scandinavians to become what were known as berserkers, wild fellows scantily clad in animal skins who at times became furious madmen, behaving like destructive beasts.

Some of the unfairness with which German women were and are treated may be seen in a sample law coming down from these rough days: The *Ebenbürtige* which made illegitimate the offspring of low caste marriages. The *unebenbürtige* wife gives her hand to a prince trusting not to the law but to his honor not to throw her aside when a profitable match presents. And

⁴History of English People, Vol. I, p. 128.

as to the manner in which the laboring poor are treated there is a favorite print in village inns in Germany representing the Bauer and the parasites who prey upon him: The emperor stands on one step with the motto "I live on the taxes," a soldier on a platform beneath says "I pay for nothing," the pastor on his stage remarks "I am supported by the tithes," the beggar whines "I live on what is given me," the nobleman airily says "I pay no taxes," and the Jew mutters "I bleed them all." Beneath the whole crew stands the Bauer, with bent back, exclaiming: "Dear God help me, I have to maintain all these!" The burdens remain to this day unrelieved and if there is any difference they are more onerous in many cases.

Feudal dues in France included the right of hunting, of fishing, of river crossing, of escorting merchants to protect their goods, etc. Vassals paid to bake bread in seignorial ovens, to grind corn in seignorial mills, to make their wine in seignorial wine presses. In differences of agreement the case was decided by a duel or appeal to arms. The right of private war was regarded as a necessity. All lords and some barons made judicial sentences and condemned to death. Serfs had no rights. An old legist said the baron might take from the serfs all they had and keep them in prison as long as he liked. Michelet⁵ mentions the fighting qualities of the church dignitaries who rode chargers, hunted and fought, wielded swords and battle axes: "We hear of a bishop being deposed by the whole episcopal bench as too pacific and not courageous enough." Such was the state of things when Hughes Capet came to the throne.

Fellowship of suffering knit together all the victims of tyranny. After the work of the day was over the inhabitants of the same neighborhood used to assemble and discuss the long tale of their grievances, the duties they had to pay, the corvées to which they were subjected, labor for which they received no compensation⁶. William of Jumieges gives an interesting account of the origin and development of a vast association throughout the length and breadth of the duchy, the object of which was the destruction of the feudal system. Unfortunately

⁵ History of France, Vol. II.

⁶ Masson, *Medieval France*.

the plot was discovered and the members were frightfully maltreated. During the hundred years war there was no affliction that did not fall upon France, foreign soldiery chased Frenchmen from their homes and a cruel nobility and clergy lived upon them. In the days of Charles VI it is said that "the nobles were like bears, lions, wolves who were combined to fleece the cattle. The peasantry ass, cow, ox, goat came in turn to bend the knee before the wild beasts of the forests; the sheep ventured timidly to say that he has already been four times sheared, quatre fois plumée. To these doleful and piteous moanings of the common people a concert of sharp and threatening voices answers: *Sa de l'argent!*, *Sa de l'argent!*; *Money!*, *Money!*. Such is the cry which all day long sounds in the ear of the famished people."

Pilgrimages to the Holy City circulated stories of the wonderful relics and the miracles that were performed there, also that Jews and Mohammedans abused the Christians. The earliest appeal to arms was by a Frenchman, Gerbert of Aurillac, who became pope under the name of Sylvester II, in 1002, and through the eloquence of a fanatic, Peter the Hermit, a native of Picardy, the first crusading army set out. In 1095 an immense concourse of people gathered at Clermont and in their midst appeared the wretched looking Peter, small with bare arms and feet, his dress a woolen tunic and a cloak of coarse cloth. He had come from Italy where he had persuaded the pope, Urban II, to summon the people to arms for the Christian faith. The answer to his discourse was unanimous in the cry "*Die el volt!*," "*God wills it!*" Thousands fastened to their garments a cross cut out of red cloth, and started for the Holy Land. The army was motley and made up for discipline by enthusiasm and simple faith. A crazy nobleman from Burgundy calling himself Gautier sans avoir, Walter the Penniless, led with 15,000, then came Peter the Hermit at the head of a hundred thousand pilgrims, and finally a German priest, Gotteschalck, with 15,000 more in the rear. The disorders committed by that rabble were so great that the inhabitants of the countries through which they passed rose up against them and slaughtered them. The handful reaching the shores of Asia Minor fell under the swords of Turks in the plains of Nicaea, all but 3,000 men and Peter the Hermit.

Later, in the spring of 1097, six hundred thousand foot and a hundred thousand cavalry started and were reduced to 50,000 by plague, famine and sickness. They deserted in such numbers, also, until only 300 knights remained, and fifty years passed before another crusade was attempted. The most absurd expedition being that under the boys Stephen and Nicholas, in 1212, when 50,000 children were sent in ships to capture the Holy Land under the delusion that innocence of the crusaders would alone secure victory. The greater part of this helpless army perished miserably by sea and land; many of those who survived were enslaved by their captors.

Boniface VIII, to replenish the papal coffers and pacify the starving Romans, instituted the Festival of Jubilee or Holy Year—a revival of a pagan ceremonial. A plenary indulgence was offered all who visited St. Peter and St. Paul churches in Rome. An immense concourse of pilgrims from all parts of Christendom had attested the wisdom of the invention, “and two priests stood night and day with rakes in their hands to collect without counting the heaps of gold and silver that were poured on the altar of St. Paul.”

The City of Rome had fallen from all greatness of its own when it came to be dependent on the fortunes of the popes. They took to Avignon the sustenance of the city, for it lived on the revenues of the papacy, and knew little of commerce beyond selling indulgences, absolutions, benefices, relics and papal blessings. With anarchy were the contests of a number of powerful families, the Colonna, the Orsini and others, always at strife with one another, who fought out their feuds in the streets and oppressed their neighbors.

Then Cola di Rienzi, last of the Tribunes, made a short-lived revolution in 1347 by appealing to the people to re-establish the ancient republic. His head was turned by his success, and inflated with conceit and vanity he became despotic and was driven out. In 1354 he came back as senator appointed by the pope, who thought to use him, but his influence was gone and he was

² Gibbon, Vol. XII, Ch. 59.

slain by a mob. Lytton claims that excommunication turned the people against him.

The Gabelle or infamous government tax on common salt made more suffering than can be readily conceived in this age and in this comparatively free country. It was begun by Philip de Valois, king of France, by compelling all to buy salt from his storekeepers, exclusively, and this monopoly became one of the chief sources of revenue of the crown. The word gabelle is old Teuton allied to the Anglo-Saxon gafel or tax⁸. Under the old regime the chief method of taxing was known as the *taille* or personal tax, a loose and dishonest apportionment, by which some escaped taxing while others were overtaxed, and bribing, with other corrupt means, let the bulk of the tax fall upon the peasants; the nobles, clergy, officials and some professions and trades were exempt, only laborers and peasants were subject to it, and the cost was so great that in Normandy it was more than all the rest of their food, the duty being three thousand per cent in some provinces on every article of necessity unless influential enough to escape the imposition. Salt was ten sous per pound, thirty times its present price.

Where places were brave and strong enough to defy the cowardly and rapacious government they were let alone; Brittany, Guienne, Poitou and several other provinces were wholly exempt or paid a trifling bribe, the rumor that the gabelle was to be imposed there was enough to excite an insurrection. Where people are too stupid or helpless to protect themselves, the world over, they will be robbed by the nearest scoundrels, and that is why politicians in charge of insane asylums sometimes steal the food from patients, and "respectable" merchants instruct the politicians how to rob if allowed to divide the plunder.

The amount of salt a family should consume was dictated by the government; it would usually cost eighteen dollars a year to provide salt for a family of six, and it had to be paid whether the salt was used or not⁹. Every human being above seven years of age was bound to consume seven pounds of salt yearly, which

⁸ T. Wright, History of France, Vol. I, p. 364.

⁹ J. B. Perkins, France Under Mazarin, Vol. II, Ch. 18.

must be used exclusively with food or in cooking. Severe penalties were consequent upon salting meat, butter or cheese in advance of their use. A fine of \$400 was enforced for buying elsewhere than from the government agent, and smugglers of salt were punished by imprisonment, the galleys and death; \$250 was the fine for taking a beast to a salt marsh to allow it to drink sea water; salted hams and bacon were not permitted to enter the country; the salt used by the fisheries was supervised and guarded by such vexatious regulations as to block commerce. The *taille* was said to be even worse than the *gabelle*, for in the parishes was set in motion a system of blind, stupid, remorseless extortion of which one cannot read now without indignation. Partiality and inequalities of taxation were bad enough, but the chief inhabitants of the country villages were compelled to fill in rotation the odious office of collectors. They were made responsible for the gross amount to be levied which they might get as they could out of their parishioners. Friends or persons who had powerful patrons, *pull*, in American slang, were exempted, while enemies or the unprotected were drained of their last farthing. The collectors, we are told, went about, always keeping well together for fear of violence, making their visits and assessments, meeting everywhere a chorus of imprecations. As the *taille* was always in arrears, on one side of the street might be seen the collectors of the present year pursuing their exactions, while on the other side of the street were those previously engaged on the same business trying to collect balances due for past years, and farther on were the agents of the *gabelle* employed in a similar manner. From morning to evening, from year's beginning to its ending, they tramped, escorted by volleys of oaths and curses, getting a penny here and a penny there, for prompt payment under this marvelous system was not to be thought of¹⁰. Spies were multiplied and illicit trade sprang up through smuggling salt from the districts where the price was less to where it was greater, and when the religious and military taxes had taken all the farmers owned they became smugglers. For the first

¹⁰ J. C. Morison, *The Reign of Louis XIV.*, *Fortnightly Review*, April, 1874, Vol. XXI.

offense against the salt laws there were heavy fines, the galleys for the second violation, and hanging for the third. There were 3,500 imprisoned and 500 executed each year for "false trade" of this kind. An army of soldiers watched the peasants and made it the means of persecution; inspecting pots and pans and comparing what salt was found with the written permission to use it. Whether they had much or little salt it could be construed as evidence of dealing with smugglers, and arrests followed. Finally the government forced the peasants to use a certain quantity of salt, whether they wanted to do so or not; or they would be accused of "false trade."¹¹

The fall of France and Feudalism at Crécy, in 1347, was through the unexpected superiority of the unmounted common people to the mounted knighthood¹². The foolish peasants at last realized their strength and feudalism tottered thenceforth to its fall, and in 1360 parliament began to legislate for the people instead of against them. In commercial unions tradesmen and merchants began to form associations not only in cities but between them. The league of the Rhine embraced sixty cities in the thirteenth century and later the Swabian and Hanseatic leagues were still more extensive. The monarchs recognized in the cities their best allies against feudalism and availed themselves of this chance to grab away the power the feudal lords grabbed from the people without sufficiently recognizing their sovereign's right to share in the grabs, so while the kings did not like the presumption of the cities in asserting their freedom, these divinely anointed grabbers gladly used the cities to fight for a regular system of taxation rather than the irregular one of feudal misgovernment. New nations began to arise in Europe, the days of anarchy and isolation were coming to an end, and, created by the crusades, the revival of learning, the spread of commerce and other forces, general sentiments spread enough to centralize and unite people in a common organization. The fourth crusade founded the Latin empire of the east on the ruins of the Greek empire. The people and many of the clergy began

¹¹ *Petite histoire du peuple français*, Paul Lacombe.

¹² *Green's History of English People*, p. 285.

to oppose the pretensions of the papal power; rival popes at Rome and Avignon finally cursed each other, and in 1414 the council of Constance was to determine between the claims of three popes. A century later the scattered forces of reform gathered. The invention of the printing press helped Luther to succeed where all others had failed and he sowed Europe with his fiery pamphlets.

Soon thereafter the Elizabethan age with its Shakespeare and other intellects, through the recent art of printing, enjoyed fruitful fields of labor by which better ideas were spread.

"For many years past the great danger to the balance of power appeared to come from the regular clergy who, favored by the success of the mendicant orders, were adding house to house and field to field. Never dying out, like families, and rarely losing by forfeitures, the monasteries might well nigh calculate the time when all the soil of England should be their own."¹³

The clergy schemed to get more land, but parliament with the people stayed their hand in 1279.

The Swiss Confederacy arose through a league of three cantons in 1291, being called upon to stand together in resistance to Austria. In 1315 Leopold, Duke of Austria, invaded the Switzerland forest cantons and was defeated, whereupon neighboring cantons and cities joined the league. The Confederacy has existed to this day, showing what intelligent unison will accomplish against tyranny.

In England the alliance was nobles and people against the king, instead of king and nobles against the people, as on the continent. This is illustrated in 1215 by Magna Charta being wrenched from King John, the first document of the English constitution in which privileges and rights are won for noble and commoner alike. And the first parliament in which citizens sat as representatives was in December, 1264, called by a chief of the insurgent nobles. The grab game took a new shape in England with different partners and results from those of Europe generally.

Magna Charta analyzed shows that previously under John

¹³ C. H. Pearson, *History of England During Early and Middle Ages*, Vol. II, Ch. 9.

the church rights were insecure, the barons were oppressed and in turn they oppressed the people, liberty was guaranteed nowhere, foreign merchants were molested, people were imprisoned without fair trial and justice was often delayed, sold or denied.

Martin Luther fought the rascalities of his former church from outside of it, after he had founded his own religion, but a greater reformer, Savonarola, thundered effectively against the rottenness introduced into catholicism by priestly knaves while he remained still an officiating sermonizer in the church till assassinated by those with whose vested interests he interfered. Erasmus, about 1517, published his *Adages*, in which he reflects with bitterness upon kings and priests. "It is the aim of the guardians of a prince," he exclaims, "that he never may become a man. The nobility who fatten on public calamity, endeavor to plunge him into pleasures that he may never learn his duty. Towns are burned, lands are wasted, temples are plundered, innocent citizens are slaughtered, while the prince is playing at dice, dancing or amusing himself with puppets, hunting or drinking."¹⁴ Popular opinion was educated by Luther in 1517 until in 1518 it fully supported his views that the pope did wrong in granting permission to commit crime by accepting pay for the indulgence, and that the pope had no power over souls in purgatory. The most striking effect of the first preaching of the reformation was that it appealed to the ignorant, and though political liberty in the sense we use the word cannot be reckoned the aim of those who introduced it, yet there predominated the revolutionary spirit which loves to witness destruction for its own sake, and that intoxicated self-confidence which renders full mischief.¹⁵

In the regency period of France wild schemes to better finances were plentiful. Louis XIV. had degraded everything. His profuseness and corruption were copied by every functionary from high to low. The national debt was overwhelming. The coins were debased to four-fifths of their metal weight. The Bastille could not contain the tax evaders. Then John Law arose with his Mississippi plan and robbed France as the Panama canal construction did later.

¹⁴ Hallam, *Literature of Europe in the Middle Ages*, Ch. IV, Sec. 41.

¹⁵ Hallam, *Op. Cit.*, Ch. VI, Sec. 12.

Similar financial excitements attended by great losses were what was known as the South Sea Bubble. The Tulip mania was about as visionary as the notion of the alchemists that common metals could be turned into gold or that the elixir of life could be fabricated chemically. Ponce de Leon roamed through the swamps of Florida looking for a fountain of youth and Coronado marched through western North America in search of the seven fabulous cities of Cibola, which were reputed as built of solid gold.

Characteristic of the methods of the latter part of the middle ages was the behavior of Richard III. in imprisoning and murdering his nephews, Edward and Richard, to enable him to succeed to his brother, Edward V., in 1483. In 1517 Dietzel or Tetzels, a prior of the Dominicans and papal representative, sold indulgences, furnishing official letters with seals "by which even the sins that you may have a wish to commit hereafter shall be all forgiven you." Repentance was not necessary, but the money was to be brought quickly. "The very instant the money rattles at the bottom of the strong box dead souls of your friends are released from purgatory and fly to heaven." Tetzels in Germany and Samson in Switzerland had a special scale of prices adjusted to the rank of the sinner and kind of sin he wished to commit.¹⁶

Francis of Waldeck wanted to make Lutheranism a private affair for the profit of his own family. The Anabaptists of Münster stood a siege of sixteen months, beginning in 1534, headed by a crazy tailor, John Bockolson, "John of Leyden," with John Matthesen and Knipperdolling. Foolishness ran riot, visions and revelations became common, such as enabled John of Leyden to have sixteen wives.

Later still, in 1562 to 1596, religious wars were fomented in France by the meddling of Philip II. of Spain. The reactionary wars of religion in Germany followed half a century later.

This Philip condemned millions of men, women and children in the Netherlands to be burned alive, buried alive and otherwise disposed of to suit his ideas of what would please God and Spain. Some of Wiclif's English ideas were carried into Bohemia and

¹⁶ J. N. Merle D'Aubigne, *The Story of the Reformation*, Part I, Ch. 6.

in the early part of the fifteenth century John Hus, a monk, began his reform movement. He reproved the people for their sins undisturbed, but when he accused the clergy and monks of covetousness, ambition, sloth and other vices, they turned on him. Hus finally denounced indulgences and thus wounded Rome in her pocket and he was excommunicated and imprisoned. The Hussites asked that the Bible be freely preached, that the sacrament be given in both forms, that the clergy be deprived of property and temporal power, that all sins were to be punished by the proper authorities. Wholesale murders, battles and a seven weeks' convention that came to nothing followed, with Bohemia and Germany being drowned in blood for thirty years.

The institution of "Chivalry" should be mentioned as amounting to instruction from childhood in hysterical exploits, about such as Cervantes describes in *Don Quijote de la Mancha*. It however, served to mitigate much brutality of the period.

A study of Joan of Arc should afford ideas of the conditions and people among whom she figured.

She was born in 1412 a simple country girl whose relatives, neighbors and surroundings were full of fairy stories of the exploits of saints and knights, and she evidently had inherited an unstable nervous system, which at times enabled her to see things others could not see, in insane asylum parlance: hallucinations. She also heard voices others could not hear, and these are not only similarly classified, but are regarded as a symptom of insanity liable to cause all sorts of uncomfortable, usually aggressive, acts. Ordinarily, poor Jeanne d'Arc would have passed for a commonplace, good little girl, somewhat queer, but the times gave direction and opportunity to her vagaries as they did to Walter the Witless, Peter the Dotty, Simon the Jumping Jack, and numbers of other funny folks, who today would be on poor farms, kicked about by saloon-keeping ward politicians, with no reverence for anything but boodle.

At thirteen she saw a brilliant light in the direction of the church and a voice said to her: "Jeanne be a good and kind child; go often to church." That is just such an hallucination as could be compounded from the advice a child of the time would constantly hear from priests, parents and friends, but when she

heard incessant talk about the war, the claims of Charles VII., and very little else, she fancied that St. Michael, St. Margaret and St. Catherine conversed familiarly with her, pretty much as our little ones nowadays tell us of the talks they have with Santa Claus and the things he promised to bring them. There were millions of angels in Jeanne's dream, as the baby sees reindeer and toys in his vision. And for the same reason, because people were always talking of such things in the presence of children; in the middle ages the chat was of saints, martyrs and dragons and similarly wonderful matters, with lots of good people swearing to having seen witches riding broomsticks through the air. Finally St. Michael told her to go to the assistance of the king of France and restore him to his kingdom. She had a lucid moment in which she answered: "My lord, I am only a poor girl and I could neither ride nor take the command of men-at-arms." The voice continued: "You must go to Maistre Robert de Baudricourt, captain of Vaucouleurs, and he will have you taken to the king; St. Margaret and St. Catherine will come to your assistance." Here again the real and unreal people, captains and saints, of whom she incessantly heard, played their parts in her day dreams; it is not necessary to think she was lying, youngsters will narrate with every appearance of truth the most preposterous cock-and-bull stories, and it is hard to tell whether they dreamed or invented the whole matter.

Her father declared that she was out of her senses, but an uncle took her to Baudricourt and the clergy made fun of her, as they had a monopoly of the miracle business and wanted no fresh humbug to cut into their profits. Such stories as her recognizing the king in spite of his disguise is just such trivial stuff as would be tacked on to "history" by miracle loving people, with lots of equally reliable comedy capering.

The state of France, at the time of the hundred years' war in the fourteenth and fifteenth centuries, was one of measureless misery. It was full of free-booters who were discharged soldiers, desperate, homeless and idle men, and the ruffians who always bestir themselves when authority disappears. They roamed the country in bands, large and small, stripped it of what war had spared and left famine behind them.

Charles VI. was an epileptic boy of 12 years with three greedy uncles to quarrel over him and plunder the territory in his name. One uncle was the Duke of Burgundy.

The fact is that France had been overrun by enemies during her hundred years' war, until it was said that Englishmen had not seen a Frenchman's face for years, as Frenchmen showed only their backs. Certainly there was great discouragement, and evidently with little reason, for at Orleans the English served their guns badly, but the French were equally inefficient until Jeanne appeared to cheer them up with expectation of miraculous intervention, firing them with bigoted devotion as the stories of what wonderful things she could do were camp-fire talk until they got up an artificial courage and actually fought instead of ran.

Her grateful king and country sold her to the English for 10,000 livres and a judge was appointed to try her for witchcraft, being in league with the devil, etc. The duke of Burgundy promised this judge, Pierre Cauchon, to make him a bishop if he condemned Jeanne, and the reverend politician resorted to all the tricks you can see in an occasional modern judge who has been bought up to terrify, thwart, belittle and defeat a helpless suppliant, dependent upon his mercy.

In May, 1431, she was burned alive as a sorceress, after a mock trial in which evidence was suppressed and there were perjured witnesses and ignoring of her right of appeal to the pope; she was so ignorant that she did not know she had such a right and no one told her, not even St. Michael. When she was safely dead it struck the tardy intellects of the anthropoids that as the church repudiated her through the trial and condemnation her success in placing Charles securely in his job of living on the labor of hard-working clod-hoppers must have been through the aid of her friend, the devil, so twenty-four years after her being burned, Charles asked Pope Calixtus to have the trial revised, and on July 7, 1456, the rehabilitation of the Maid of Orleans was proclaimed and for four hundred years the people of France thought her good enough to make a saint of and many intimations came from Rome that she was about to be promoted in heaven, but the desire was juggled with, as Rome wanted to see what

there was in it for her, as politicians remark, and the French government awoke to the observation that priestly and church sisterhood schools, while well enough meant as a rule, taught the children to be good little dolts and monkeys and not to dare to think except as the church dictated even where their country was concerned, whereupon the government ended that sort of schooling and Rome retaliates like a child, refused a bite of apple, practically saying, well, you can go to blazes with your old Joan of Arc, she was a fraud after all. At least that meaning can be given to the following news from Paris, August 2, 1902:

France is much disturbed by the news from Rome that the Sacred College of Cardinals definitely refuses to canonize Joan of Arc.

The decision, coming after several favorable opinions had been issued and committees had been appointed to examine into the heroine's claims to beatification, is construed as a retaliation for the expulsion of the religious orders from France.

The Sacred College mentions five reasons to justify refusal:

First, that Joan of Arc culpably attacked Paris on a religious fete day, while the city was celebrating the birth of the mother of Jesus.

Second, her capture disproved her claim of having a heaven-ordered mission.

Third, her attempted evasion shows that martyrdom was suffered unwillingly.

Fourth, that she lacked heroism when she signed an abjuration of alleged errors.

Fifth, according to her own admissions, it is doubtful whether she died a virgin.

The French people are deeply grieved at the decision, and the last reason makes even non-believers indignant, as they regard it as a wicked insinuation.

CHAPTER V.

EVOLUTION.

The evolutionary doctrine not only refers to the life-history of mankind, animals and plants, but the processes by which the universe was constructed and is passing on to its dissolution.

Man is part and parcel of the universe, and as he proceeded from and was created by the workings of the laws of the universe and is made from the same elements you find in rocks, metals, trees, seas, clouds, suns, and stars, and as man exists because the universe exists, to study him aright we must survey him as he aggregates in families, tribes and nations, in his relations with, resemblances to, and differences from the animals with which he is associated.

The more exact our knowledge becomes, the deeper we study into the nature of all things, the more consistent we will find the explanations afforded by evolutionism and we are lifted above the childish views of things the less informed entertain, and are freed from their superstitions and liability to misdirection of energies.

The popular notion of the doctrine of descent is that evolutionists claim that man came from an ancestral monkey, which is about as inaccurate as are most current opinions upon scientific subjects. One of the stock refutations of the unscientific is to call attention to certain educational lights, having refused to accept the Darwinian philosophy. We may find honest as well as dishonest differences of opinion arising everywhere; in law, medicine, theology, politics and in our very homes, over what appears to you to be the most undebatable subject. Every new idea has been fought at the outset. Lactantius and Eusebius denied that the earth was round, while Basil and Ambrose talked of the possibility of anyone escaping eternal torments who believed that sort of nonsense. Cosmos' assertion of the flatness of the world was not denied for six hundred years, and then d'Ascoli paid with his

life for proclaiming his doubt. The Newtonian and Copernican theories were ridiculed by Luther and Melancthon. The life of Descartes was sought by his confreres for stating truths that are taught in our schools today.

The bright side of evolutionism appears in recognizing that man can go on improving indefinitely and rise immeasurably above his present condition. Lives of devotion to principle will come to be considered worthy of emulation rather than the wolfish scramble for money from juvenility to the grave. The penniless missionary who threw his life away in trying to elevate some wretched race will be appreciated as superior to the sleek luxuriating fashionable dealer in platitudes who gives his hearers "what they think they want" to enable him to hold his place. Many parts of the world grow better, because they evolve. The evolutionary theory, therefore, gives us more hope for the future than is derivable from any other source.

After all what does acceptance of a theory by the public amount to as evidence of its validity? The majority today does not deny that the earth is round, but gives you no reason for it other than that it is generally accepted as true. They laugh at the negro preacher Jasper for claiming that "the sun do move," yet he is more logical, even though equally ignorant, for he cites his authority. It is growing customary to accept the evolutionary theory, not because it is any better understood by people at large, but because opposition to it is antiquated. "Beliefs" are put away like hoop skirts, ear-rings and frilled shirts.

In 1885 a man in London wagered several thousand pounds that the world was flat and appealed to the law against the decision of his referees; the next year another in Washington offered \$10,000 for proofs that would convince him that the earth was a sphere. It would probably be as easy to convince the average politician that honesty is the best policy.

Referring again to the opposition to new and valuable ideas, the discoverer of oxygen, Priestley, was refused an appointment in a scientific expedition owing to his advanced views in 1772. Alexander von Humboldt's researches were snubbed and opposed by many who should have known better. Roger Bacon, whose chemical knowledge was three hundred years ahead of his time,

was persecuted by the pundits of Oxford. When anatomy was made a science by Vesalius he was hounded to death by the disciples of the old medical school of Galen. Preventive measures against pestilence, such as were afforded by vaccination, quarantine, etc., met with violent hindrances. Chloroform as an anæsthetic was at first condemned by clergymen and physicians as an impious interference with God's intention that men should suffer. Buffon's simple geological truths were derided and Cuvier truckled to his imperial master in doing all he could against the genius Lamarck, whose studies of animal development made a revolution in zoölogy.

Men naturally regard themselves as the most important things on earth and imagine that the universe was made for them alone, that plants and animals, suns, moons, and stars, seas and lands were made for their convenience, whereas man is a comparatively insignificant animal with feeble muscular power; many of his senses are poorly developed, when we consider the sight of the eagle and smelling sense of the hound. The intelligence of man, in the long run, enables him to triumph over hostile influences in nature which in individual cases are terribly destructive. That is, man survives through advantages he enjoys, in spite of multitudes who are overcome in the battle of life.

The Mediterranean sea was popularly regarded as the center of the Earth's surface, but doubts on this point accumulated as more lands were discovered. Of course the earth itself was supposed to be the most important part of creation and it was thought that suns, moons, and stars were small in comparison, and merely revolved about us to give us light. It was a great shock to learn that the earth moved round the sun, which was much larger than the world we live in. Such new ideas were regarded as liable to upset the powers of a set of rulers who claimed divine knowledge on these points, so it was considered best to try to kill off the new notion even if necessary to destroy those who advance such ideas. We complacently reconciled ourselves to the new place assigned us by science, but were jostled again when our sun was found to be a mere speck in the universe of stars, many of which were larger than our whole system of sun, moon, and planets put together.

Picture our earth blazing as a star for millions of years; the iron and minerals existing in a state of gas, and, finally, as heat enough had been given off, patches of liquid and solid substances began to accumulate until a crust was formed, which was incessantly being torn by enormous volleys of melted masses thrown up from below. Watery vapor condensed into hot seas, after awhile, to be often tossed aloft as steam again. Hot rains fell upon the shrinking, wrinkling, folding heaving surface, as solidification went on. Dislocation threw up mountains and the crust thickened till at the present day it is about fifty miles deep. This on the scale of a ball eight inches in diameter would afford one-twentieth of an inch of solid crust, or about the thickness of wrapping paper, while all the rest may be fire and melted materials.

As to when the evolutionary idea began we would have to go back to Aristotle, who hinted at a relationship between the lowest plant and the highest animal on account of certain matters in common between them; then Bonnet and Lamarck thought animals were developed from lower into higher forms and von Baer pointed out the remarkable similarity of the unborn young of higher to those of the lower animals, such as fishes and lizards, and asks: "Why should a dog begin like a fish, a lizard, and a bird?"

Robt. Chambers¹ advanced the hypothesis applicable to all similar theaters of vital being that the simplest and most primitive type under a law to which that of like production is subordinate, gave birth to the type next above it, that this again produced the next higher, and so on to the very highest, the stages of advance being in all cases very small, namely from one species to another.

Geologists found that the lower down they dig into the earth the simpler become the animal forms, so that in the oldest rocks we find no monkeys or four-footed animals, no lizards or frogs, but only shells of sea animals and a few bones of fishes of kinds different from those now living. Evolution is proceeding daily, hourly, all about us. The child evolves into the grown person, the kitten into a cat, the puppy into doghood, the calf into the ox or cow, the lamb into the sheep, the seed into the tree, villages into towns and towns into cities, families into tribes, and tribes into

¹ Vestiges of the Natural History of Creation, 1844.

nations, savage people into civilized people and so on.

The change of gases to liquids and solids are every-day events, the formation of crystals are also familiar to us, but, while plants and animals are made up of the very same things of which we are speaking: carbon that forms coal and diamonds, nitrogen and oxygen, that we breathe in the air, and hydrogen, which, with the oxygen, constitutes water, there is evidently something that binds these substances into living organisms. The processes of life are largely mechanical, the food is split up into combinations suitable for deposit from the blood as bone, muscle, tendon, hair, teeth, etc., and none realizes the mechanical nature of these processes so clearly as the one skilled in the use of the high power microscope. He will take the flesh, bones, etc., and magnify them to an extent equal to making man a mile in height and proportionately broad. He demonstrates that not only a man, but all other animals, and also plants without exception, are composed of innumerable little specks called cells, which are compressed mechanically into a variety of shapes. These cells differ slightly from each other in composition, according to location, but in the main, they consist of the same carbon, hydrogen, oxygen and nitrogen; occasionally iron, phosphorus or lime is added. Each cell eats, grows, splits into two or more cells, and is finally consumed or thrown off to be replaced by its successors, and every one of these multitudinous cells, varying in size from a hundred thousandth of an inch to one-tenth of an inch, has proceeded from a single cell which grew and divided up into the colony that forms the individual. And that original cell, which by its multiplication formed the man, is an egg. The original cell which by its multiplication formed the tree or other plant is the seed. The main chemical difference between the seed and the egg being the frequent absence of nitrogen from the first named. Eggs and seeds vary in size from invisibility to the unaided eye, up to a foot in diameter. A hen's egg seems to you a very lifeless thing, but it depends upon what you call life as to whether it is to be so regarded or not. When the protoplasm of that egg is capable of being warmed into cell division, to the chick's formation, you will grant, probably, that it lives, although it does not show life through visible motions of its particles. When the chemical constituents of

that egg break down into simpler combinations and each of them is capable of assimilating carbon, hydrogen, etc., and building them up into higher and complex molecules similar to the cell protoplasm, there is life. When the process is inverted and retrograde, when the solids break down into liquids and both evolve gases, often simple elements, then the cell or individual is dead.

Naturally physiologists are deeply interested in the cellular phenomena and the problem of life is being chased with microscopes and reagents until it is becoming better understood at least. Hoppe-Seyler, at the inauguration of a great German physiological laboratory, spoke of life as that chemical power that enabled protoplasmic molecules to exist in an anhydrous condition in a hydrated medium. In as plain language as possible the elementary atoms that are grouped into particles exist dry amidst water. That does not exactly express it, but it is as near as technical language can be translated in this instance.

A low living representative of the cell abounds in our gutters, crawls over our roofs, and is in ditches, all about us. It is known as the amoeba. It is, so to speak, a living, moving, egg, that never passes beyond the egg stage. It is like a little speck of albumen, or white of egg, and has no organs whatever; no eyes, feet, ears, nerves, muscles or bones; it is merely a particle of jelly, yet it moves by spreading out, pouring itself along in a streak, and when anything it can assimilate is touched, such as vegetable or animal matter, gradually it converts such edibles to its own use, then it grows and splits into two amoebæ, which part company and they in turn eat, grow and divide. Now the difference between this cell form, the unicellular and other cell forms, the multicellular, is simply and mainly in the cells, into which it divides, not sticking together. The amoeba is the egg form and never can be anything but an egg, and it remains as it is. But somewhere, somehow, one more amoeba, out of the countless billions which went on and still go on parting company, did cohere, probably by a little accidental hardening of the outer membrane enveloping it. The splitting or fission process went on, but the cells clung together and we have the mulberry form of low living animals, such as the Norwegian "flimmerball." It is noticed that when finally the mulberry or "synamoeba" form does

split it gives birth to amoebæ, which afterward become mulberry forms again, like the parent. Now comes a change, one or a few of those mulberry forms, apparently by accident, took a step higher and originated the pouched or "gastæada" form. If you can imagine the cells of the mulberry form gathered at the surface of its globe, with water in the middle, suddenly collapsing, you will have the pouch constructed with two layers, like an old Dutch worsted night cap, capable of being turned either way. A bag with two thicknesses of material. Here we get the first glimpse of differentiation, or division of labor between cells. Those upon the inside of the pouch do the food gathering and pass it through themselves to the other cells and the outer cells attend to navigation. Changes of environment have produced a vast multitude of animals with this shape upon which accessory organs have grown by development. The sea anemone and the earth worm are close to this stage. The worm is merely an elongated pouch animal. The double layers of cells are demonstrable in it. When a pouch animal, as the worm, develops an egg internally, that egg resembles the single cell amœba, next the mulberry form, and lastly the pouch or worm form.

The back-boned animals come next, but we cannot dwell upon the rapid and many changes that take place in the evolution of one higher form into a still higher. The acrania or headless stage follows with a cartilaginous rod instead of a backbone. This headless form exists as a headless animal called the amphioxus, a Mediterranean fishlike form. It has rudimentary blood vessels and its young pass through all the previous stages to the acranial. That is, first a single cell, then mulberry and pouch forms.

The tenth stage of Hæckel is that of single nostriled animals like the lamprey eels, and both embryology and comparative anatomy show that these eels pass by easy gradations into the selachii, or what are now represented by the living sharks, only less highly organized. Sharks pass through all the previous stages to the eel or single nostril stage in their development.

The living Salamander fish represents the twelfth or mud fish stage. Gilled amphibians come next. Tadpoles reach their development through all the stages mentioned till they resemble the mud fish, when the gills drop off and the frog appears. Some

of these amphibia with gills retained their tails and this form dates back to the coal period geologically. From these tailed batrachia came lizards and reptiles generally. Geology and the development of these animals prove this. One of the best proven successions we have is the transformation of reptiles into birds. Of course reptiles remain as reptiles today, but at a very early period of the world's history several, mayhap many, reptiles slowly developed into birds. Scales, such as fishes and reptiles have, many be shown to divide into hairs, and hairs into feathers. The downy, hairy breast of the little chicken, and its wing feathers, may be seen to become broader and split at the ends, resplitting until each hair becomes a feather. The fossil remains of animals half reptilian, half bird-like, have been found, and all birds pass through the previous stages from the single cell to the reptilian form, and even develop and lose their gills in the process of development. Thus, step by step, marsupials like the kangaroo sprang from a form called promammalian, like the queer platypus, which has the body of a dog, the tail of a beaver, spurs of a rooster, and the bill and feet of a duck.

Half-apes, or prosimiae, probably originated about the beginning of the Tertiary period out of the marsupial or rat-like form, and through a higher brain development. The lemurs are large living specimens of this class and the resemblances to the lower and next higher forms are seen combined in them. The flat-nosed, tailed-apes, branched out to one side, while the sharp-nosed stand in our line. The jaw of the lemur was modified in the tailed ape, with narrow noses, the catarrhine, and the claws became converted into nails. The manlike apes or anthropoids follow, namely, orang outang and gibbon in Asia, the gorilla and chimpanzee in Africa. These apes lost their tails, partially lost their hairy coverings, and developed brains. It was from a prehistoric anthropoid form, such as this, that the ape-like man, the speechless primeval man, arose. The forehand of the ape form developed into a human hand and the hinder hand into a foot, the fingers degenerated into toes.

All the preceding stages mentioned are passed through by every living man in his development, preceding and after his birth, the single cell to the lemur, and at birth the ape-like stage.

Observe the prehensile power of the infant's foot. It has the monkey-like ability of grasping with its feet and finger-like toes.

The gradual development of the animal language of sounds into words going hand in hand with the better developed larynx, lungs, etc., and the brain, to regulate the vocal parts, brings man up to his present advance upon the brutes; some men rather, for some Fuegians have but a miserable vocabulary, and they cannot count over three. They fairly represent a class of primitive men.

In September, 1901, Professor Hæckel studied a human-like monkey of Java. An interesting specimen of the young gibbon was watched by him at his own house there. The species is found only in Java, and is called *Hylobates leuciscus*. The natives call it, on account of the characteristic sound it utters, "oa." When standing it is scarcely taller than a child of six years. The head is comparatively small and it has a small, slender waist. The legs are short and the arms much longer. The face is more human than that of the orang outang. Professor Hæckel says: "Its physiognomy reminded me of the manager of an insolvent bank pondering with wrinkled brow over the results of a crash. Distrust of the 'oa' towards all white Europeans is noticeable. On the other hand, he was on terms of intimate friendship with the Malays in our household, especially with the small children. He never crawled on all fours when tired of running, but stretched on the grass beneath the tropical sun with one arm under his head. "When I held tasty food just out of his reach he cried like a naughty child, 'huite, huite,' a sound altogether different from 'oa, oa,' with which he expressed various emotions. He had a third and more shrill sound when he was suddenly frightened. The speech of these human monkeys has not many different sounds, but they are modulated and altered in tone and strength with a number of repetitions. They also use many gestures, motions with their hands, and grimaces, which are so expressive in manner that a careful observer can detect their different wishes and various emotions. My specimen liked sweet wine; he drank like a child, and peeled bananas and oranges, just as we are accustomed to do, holding the fruit in his left hand. Most of the Malays do not regard the gibbon and orang outang as brutes. They believe that the former are bewitched men, and

the latter to be criminals who have been changed to monkeys as punishment. Others think they are men in the course of development."

Evidences are abundant to prove that many fishlike mammals, as whales, descended from forms more like land animals resembling the bear. In some whales the very young have teeth and rudimentary leg bones, which in the adult are lost. It is conceivable that millions of years ago some bears betook themselves to the sea for fish, and in time their progeny developed abilities to survive in a watery medium, better than upon land. It can be easily demonstrated that the fins of the fish pass gradually into the limbs of quadrupeds, and we are justified in believing that this change came about by some fishes taking to land for food.

Consistently with the Darwinian discovery we find rudimentary organs in many animals, including man, which enables us to trace the origin of such beings better. The ostrich and cassowary have rudimentary wings because their ancestors gradually came to depend more upon their legs than upon flying. The common house fly has rudimentary hind wings, but it descended with all other insects from a single form with four wings and three pairs of legs. In thin animals, as serpents and serpent-like lizards, one lung is rudimentary. Birds similarly have the right ovary atrophied. Man has rudimentary muscles attached to ears which are useful in lower animals, but are functionless in him. The coccyx end of the spine is the same in the four higher apes as in man. These five primates, man and the anthropoids, have only rudimentary tails. Not only does the unborn human baby have a visible tail, but at one stage it possesses gills. Horses have what are known as splint bones, which in their progenitors were extra leg-bones or finger bones, with hoofs at the end. The warty growth on the inside of the horses' legs are rudimentary hoofs. Man has a little fleshy growth in the inner corner of his eye; this is called the caruncle, and is a rudiment of the nictitating membrane or third eyelid of lower animals which may become pathological. A long muscle which in four-footed animals serves a useful purpose in the hind leg is only occasionally found in human corpses, and when found is often not attached to the leg. The vermiform appendix at-

tached to intestines has no use in man, except to aid in killing him at times, but is an important entrail in birds.

Prof. E. D. Cope found fossil remains of the ancestor of all horses, and, strangely enough, it was a carnivore or flesh eater. It had five toes and was digitigrade, that is it walked upon the tips of its fingers like a cat. As time passed and swiftness became a life-saving ability, and it was driven to the plains, its descendants became grass eaters, through compulsion, and the finger and toe bones lengthened until the heel cord of the modern horse is half way to its body, while the other fingers, one by one, fell off as they became useless. The horse evolution is thoroughly demonstrated. We have the bony remains of the five-toed, four-toed, three-toed, two-toed horses in direct lines from each other, the greater number of toes lying in the deeper strata of the earth.

The proofs of evolutionary doctrine may be summed up by condensing from Hæckel as follows: 1. The fossil evidences of the gradual appearance and historical succession of plants and animals, and evidence of progressive changes in their forms. 2. The history of organ development in plants and animals, the older animals having ruder, the later more perfect organs. 3. The connection between the history of descent of animals and that of the individual. Each man and animal repeats in his life-time the stages through which all his ancestors have passed. For instance, the child is a thoughtless, cruel savage, the youth a barbarian and the adult may be a reasonable person. 4. The resemblances between all animals point to a common origin. 5. The rudimentary organs. 6. The resemblances of species of plants and animals in family groups. 7. The geographical distribution of species from centres or single localities. 8. The adjustment of species to their environment, the weak dying off and fittest surviving. 9. The unity and completeness of biology as a whole. No theory so comprehensive as the evolutionary, or so satisfactory, has ever been announced.

Natural Selection is a term used by Evolutionists to include a great many instances of favorable opportunity enabling victory in the battle of life. Seeds of any plant will not grow if they fall upon rocks and in dry places. If the necessary soil,

heat and moisture is encountered by the seed it will germinate. If moisture only is furnished, then, in most cases, the seed will decay, and in these simple matters we have instances of the selection of Nature. Similarly cats do not live to catch rats. Plenty of rats will enable the raising of a larger number of cats. Had Daniel Webster been born in the African wilds his oratory would not have been heard of in civilized countries. The accidental possession of brains, location and opportunity constituted what natural selection did for him. Races accidentally best fitted to resist the diseases of a country and to cope with neighboring hostile forces are the ones to survive; this is an instance of natural selection. Animals that have not some advantages succumb to the stronger. The mole protects himself by burrowing, the deer by his flight, natural abilities enable them to live. The law is capable of indefinite extension. Had Newton or Herschel been born before the days of telescoping and mathematics nature could have made no selection of their brains for our instruction, at least in the ways it did.

An old instance of the misinterpretation of matters relating to nature lies in the explanation of many of the polar animals being white. It was pointed to as an evidence of the wisdom of providence in enabling them to remain in their icy and snowy regions undiscovered by enemies. The real explanation is that because such animals are white their chances for escape are better, and in conjunction with the law of heredity it is evident that those animals that do escape, and only those, will propagate their kind, which, subject to the same pruning action of nature, ever tends to limit the color to white; but the wolves, seals and many others that have size, strength, a watery medium, or some other advantage, remain colored. And those animals which change their color to a darker one when the snows melt and the ground is bare are still more likely to escape.

The art of horticulture has through natural selection given us many varieties of apples when at one time there was only one original apple form. Differences and peculiar advantages have thus arisen in horse, cow, sheep and other branches of stock raising. The Shetland pony is a degenerate form of the same kind

of horse from which the Arabian has descended, both through natural selection processes.

It is difficult to say often what constitutes an advantage that will enable Nature to select a form for survival. Sometimes intelligence will be serviceable, sometimes stupidity, the shell of the turtle is as effective toward life saving as the wings of the eagle. A deformity even may serve this end. Wingless birds like the apteryx, or practically wingless like the penguin or dodo, thrived because they could not fly and were not in danger of being blown out to sea.

Gardeners have in the last hundred years changed, advantageously, the peculiarities of thousands of flowers and plants, through selection.

The red clover, *trifolium pratense*, is propagated by bees which in search of honey fructify the flower by carrying the pollen of one to the stigma of another, the clover not visited by bees does not yield a single seed. The number of bees is determined by the number of their enemies, the most destructive are the field mice. Cats destroy the mice, and Carl Vogt and Huxley carried out this instance of natural selection amusingly in these words: "Cattle which feed on clover are one of the most important foundations of the wealth of England. Englishmen preserve their bodily and mental powers chiefly by making excellent meat, roast beef and beefsteak, their principal food. The English owe the superiority of their brains and minds over those of other nations, in a great measure, to their excellent meat. But this is clearly dependent upon the cats which pursue the mice. Old maids have a fondness for cats, and so to these old maids who pet cats is due the fructification of the clover and the prosperity of England.

In Paraguay there are no wild horses and oxen, as in other contiguous parts of South America. This is explained by newly born animals being killed in that country by a small fly which does not thrive elsewhere. A little disturbance to the balance of life in the destruction of apparently insignificant insects may be attended with the most far-reaching and important consequences. This law of natural selection includes that of the survival of the fittest. Savage races invariably die out with the

advent of civilization. The battle is to the strong in brain rather than limb, the weaker are driven to the wall and those best adapted live and multiply till a superior power crushes them in turn. The "fittest" surviving does not mean that the "best" is always the victor in life, for the fittest may be the scoundrel, the quack or the hypocrite sometimes. Ordinarily people who think most and are sincere are those who appear to be the ablest to survive where the thoughtless would not, but during the time of the Spanish inquisition it was the thinking and the sincere men and women who were destroyed, and Spain suffers much degradation today from the survival of the "fittest" who were enabled to escape the inquisition. An intellectual descent has been cut off in this case, for it was the unfittest to survive.

The next most important law is Sexual Selection. It is through this that gaudily colored birds, like the pea fowl or birds of paradise, retain and even originated their colors. Song birds are known to compete with their voices for mates, and the songster whose voice suited was the victor, and what was more natural than that singing should improve through descent from such parents. Most animals contend for their mates with horns, hoofs or teeth, and combats for wives was the rule with primitive races of men. Nowadays the purse well filled, or some such allurements, is held out for the coveted lady.

It is through the operation of this law that ugliness, deformities, and even undesirable mental traits, are being eradicated. Certainly the people of this era are better favored physically and mentally than those of earlier ages.

Natural selection and Sexual selection thus work together to conserve the useful, improve, modify, evolve new and better forms, with occasional retrogressive blunders.

The law of Differentiation or Division of Labor is also worthy of consideration. It is by virtue of this that some men develop in one direction, others in another; the advantages of blacksmiths and lawyers, shoemakers and watchmakers keeping to and improving upon their separate vocations are too evident to need mention, yet an application of this law of labor division has, till recently, been overlooked where it has been operative

countless ages in animate things, especially in the organs which serve life functions in all plants and animals.

Between the years of 1860 and 1870 degenerates flocked to the gold fields of California and perished in large numbers. Many who survived increased the insane asylum population of the coast. Those who were starved and frozen to death in Alaska in their search for wealth were the unfittest to survive, though many may have been better men than those who succeeded and lived to return home. When the communistic riots broke out in Paris the excitable insane who exposed themselves on the barricades were killed off to such an extent that the average insane asylum population in France was reduced greatly for several years thereafter. Ordinarily the insane may be fit to survive when cared for, but in such instances nature finds them unfit and in the countless wars of earlier times the mentally unsound perished quickly. Unfortunately wars destroy, as though they were unfit to survive, people who were otherwise more worthy of life than many who saved their lives.

Man has exterminated the mammoth, the urox or aurochs, the quagga, dodo, auk, and has nearly exterminated the okapi, the recently found progenitor of the giraffe, and the buffalo.

Such instincts as the young cuckoo throwing his foster brothers from the nest so as to get all the food himself, ants making slaves and turning plant lice into cow-like milk givers for themselves and the larvæ of the ichneumonidæ feeding within the live bodies of caterpillars, lead to advancement of organic beings in a physical way, by multiplying, by varying, and letting the strongest live and the weakest die. An illustration of an advantage enabling a city to exist at a time when other places were being destroyed occurs in Corinth, which held a situation protecting it from enemies. But what may be advantage in one age may not be later; for example iron armor answered very well against arrows and spears, but cannon balls and bomb shells made the picturesque armor worthless and ridiculous. "Dog in the manger jealousies" of neighboring nations proved an advantage to the otherwise weak little republic of San Marino, which survives in Italy like an imperium in imperio. It passed through the sovereignty of the Roman republic and empire, the Goths, the

Greeks and the Germans, and remains free with no military or taxes, and since A. D. 1300 its freedom rests upon its being high up in the mountains and the "friendship of potentates," the sour grapes of Aesop's fable.

Transplanted from the older country, where the struggle to exist is extreme, like that between the Siberian wolves who snap up the first of their pack to be wounded, Polish laborers are described as existing in Chicago in a deplorable state, poverty-stricken, ignorant, stupid, hungry and dirty, amidst industrial conflicts,² fighting one another to the death for enough to live upon.

Misconceptions of the law of survival incessantly occur. Naturally the sincere student thinks that if he fits himself honestly and fully for his profession he will be rewarded by employment. He is in error, for his fitness to practice does not mean that he is the fittest to succeed. He may deserve to succeed and be known to those who are capable of judging to be able and skillful, but the people upon whom he depends for pay for services are not informed, and the unscrupulous charlatan imposes upon the ignorant public and revels in wealth obtained by deceit and injury to his fellows, where the best man, the one who could have done real service, was left in poverty and unrecognized.

Then in matters of dress we have survivals from many ages. Ear-rings come down to us from savage days and bracelets indicated at one time that the wearers were slaves. When the young officer puts on his sword belt he is surprised at the convenience of the two buttons on the back of his coat, and is unaware that those buttons are a survival from a time when gentlemen wore swords and were retained after swords went out of fashion. The lower set of buttons were used to hold the coat-tails out of the way when it was customary to carry the sword blade between the legs. Similarly when times degenerate, as they always do when a war breaks out, or as they may be said to revert to former conditions, it is surprising how readily we become barbarians or savages, and an argument against a standing army in time of peace could be that man is a natural soldier and needs little training for warfare. Certain ideas may suddenly take root such

² I. K. Friedman, by Bread Alone, 1901.

as caused the crusades in the 11th and later centuries and be the fittest to survive because appealing to the emotions of a similarly constituted set of people, though belonging to different nations and times. The Mohammedan teaching is so simple and appeals so directly to the ignorant heart and passions of crude Arabians that when first taught it took like wild-fire and created the vast Ottoman and Mohammedan empires. One God, the right to enslave or exterminate enemies, an absolute claim to the wealth of the world and assurance of inheriting a future life, with all the enjoyment of this life multiplied, are the inducements held out to the "common sense" of these higher kinds of apes, with whom we have much in common and whom we resemble more than we like to admit.

Many things that are unaccountable can be explained by this principle of survival. For example, the English hostler will hiss while currying his horse and the Western cowboy hisses when he tries to stop a runaway pony. Connecting these matters with the fact that the hiss of the rattlesnake often causes a horse to halt, to enable him to locate and escape from the reptile, the origin of the custom may be explained, though not suspected by the hostler or cowboy. Oaths and imprecations or ejaculations in all likelihood come down to us through untold ages of exclamations, roars, grunts, howls, etc., of progenitors who expressed their surprise in terse and rude ways. Swearing, deep, loud or whispered, is like the lion's roar, the jackal's snarl, the spit of the cat, and the growl of the dog; and the kind of oath used may outlive the ideas of the people who originally used it. For example, many a German today when excited exclaims: "Donnerwetter," which, when the "thunder god" was revered by the primitive Teutons could have been rank blasphemy, furthermore the Latins and Germans are more careless than the English in using the name of God unnecessarily, as a survival from times when the Christian's God was not revered at all.

Just as birds come from lizards, and yet we have reptiles today, and as horses came from carnivores, and we have flesh-eating animals today; and the sharks, fishes and marsupials still survive through which man and apes developed, so thousands of years hence, whatever civilization may be then, lower types will

doubtless remain, though the rule is that the lower dies out in the presence of the more exalted. It would be hard to find conditions to which Natural Selection does not apply. In every branch of life there is contention with destruction of the unsuccessful and the triumph of the successful. Vast fields of plants grow rank and large in the tropics where heat and moisture favor, and both plants and animals fight there for supremacy. In the Arctics the mosses and algæ alone survive the frost, and farther north no animals or plants can exist.

Things develop or retrograde. Ideas grow and are throttled or live for a while, or even for centuries, to be supplanted by others better suited to new conditions. What may be considered evil develops, differentiates, succeeds alongside of conditions people may consider good, and both good and evil develop and contend for place. So in yourself there is a fight between inclinations and principles, and it depends upon circumstances as to which may dominate. And both so-called good and evil develop for the same reasons, differentiation and specialization, and they combat one another because of opportunity and self-interest. For instance, some police chiefs of large cities take bribes from policemen for "soft beats" and they blackmail street-walkers, saloons and thieves, proceedings ranking as bad in the abstract, but it is such a tax upon crime that criminals cannot afford to do business, so that in the end it amounts to the same as though the law had been enforced, and what may be called "good" may thus spring from official thieves fighting unofficial crime in this way, with the occasional hauling up before a grand jury of the official thieves, or the upsetting of a rotten city government by hysterical reformers.

As some faculties or organs develop or some forms of life do also it may be at the expense of other faculties, organs, or living things. Encroachments of nations upon each other often result in the shrinking or extermination of one and growth of the other. An interesting discussion of forest rotation or the disposition one set of seeds in the soil have to succeed another kind when the conditions are more favorable for the successor, is given by Campbell³, the larches and beeches being displaced by pines and

³ American Naturalist, 1886, p. 521 and p. 651.

firs, and these in turn by oak trees, showing natural selection conditions at certain periods favor the growth from certain kinds of seeds, which of course are previously in the soil awaiting their turn to sprout and develop. Beavers are now becoming extinct in America as they were also hunted out of existence in Holland in 1825. Brown rats expel the black rats from countries, and they are enemies, though rats and mice live together in corn stacks amicably. The Norwegian rat has successfully chased other species from almost all countries. Hippopotami and reindeer remains are found side by side in several regions in England, and some fossil skulls are found in the west of the United States with a sword-like lower tusk curved in its growth till it penetrated the brain of its owner, and to this may be assigned the extermination of the species, an unfortunate kind of natural selection which may have been brought about by sexual selection, that is the curved tusk may have attracted mates as ornamental, but, like many other luxuries and embellishments favored by the gentler sex, it proved fatal in the end to its possessor. There has been an astonishing destruction of buffalo in America, known as bison in Europe. Bison disappeared from Britain earlier than did the aurochs. In 1500 bison were plenty in Poland, and a remnant exists in the Caucasus today, and our Yellowstone Park preserves survivors of the once vast herds. Bison ranged from Siberia into Alaska and abounded in the black forest in the time of Julius Cæsar, and in the 10th century they were eaten in Switzerland and Germany. The skulls of aurochs fifty inches across have been found in the peat bogs, pierced with flint hatchets, in Britain, Scotland and the continent, as far south as Greece. The wingless bird, the auk, was extinguished in the last century. An extinct marsupial resembling the Kangaroo walked on all fours, and extinct elephant remains are found in Pliocene Europe from Yorkshire to Algeria. A northern sea-cow or manati was so helpless and stupid it was quickly exterminated in the 18th century. Sturgeons appeared in the upper Eocene period and notwithstanding their slaughter is incessant and prodigious they are the fittest to survive today, because they increase more rapidly than they can be killed off. They are exceedingly voracious, and the majority are carnivores and, like salmon males,

often eat their own young. Sturgeons were formerly in the Danube by the thousands, but they have been reduced not only in numbers but in size also, though even now fish of 1200 to 1500 lbs. are occasionally caught there. A river 400 ft. wide has been blocked, in Russia, by solid masses of sturgeons in their migrations. They evidently possess some advantage that causes them to be selected by nature to survive in spite of hostile surroundings that rapidly reduce other forms of life. While there is inheritance to fix the kinds of animals and plants so that descendants will resemble their ancestors, there is also the departure from exact resemblance we see all about us in living things, and this is known as Variability. Just as people do not exactly resemble one another externally in their features, limbs, complexions, and so on, so internally there are equivalent departures from the fixed types of muscles, arteries, etc., and owing to sexual selection having nothing to do with internal organs, and natural selection permitting any kind of feature to survive and be transmitted that satisfied conditions of life even imperfectly, the truth of the claim of Wolff that internal organs are more variable than the external could be explained. Ear variability is accounted for by Darwin as due to the indifference of sexes as to this feature, hence sexual selection does not influence its shape. The variability of minds of men is very great, even in the same race, and among dogs the greatest difference of character can be seen. Brehm says each monkey has his individual temper and disposition. He mentions one baboon remarkable for its high intelligence. Much mental capacity is innate and education and treatment may develop it. Insanity and deteriorated mental powers run in families, as in the case of the Spanish Hapsburgs and Romanoffs of Austria and Russia. Domesticated animals vary more than do wild animals, owing to the variability of conditions. Races may also run down or develop better under diverse states. Rank and occupation make changes in character. Wealth too often causes feebleness of mind by disuse. Better food and comfort increase stature, and when a race attains its highest physical development Beddoe says it "rises highest in energy and normal vigor." Sunlight and heat have but small influence in producing color even during ages. With animals cold and damp affect their hair

growth. Use strengthens muscles and disuse degenerates them. When an artery is tied its branches develop, a lost kidney or lung causes the other to increase in size and bones increase in length and thickness by carrying greater weight. The longer legs of man as compared with those of tree-climbing apes could be readily ascribed to the progenitor of early man having often abandoned the forests and coursed over plains, steppes and savannahs in chasing prey and escaping from enemies, and thus developing the length of legs and their muscularity over former states. Grecian statuary shows the calf muscle but little developed as compared with the modern condition, and so a very few centuries have added size to this part. Spencer says the jaws of savages are larger through eating coarse and uncooked food. The "high cheek bones" of some individuals can be readily referred to the jaw bone muscle having undergone reduction in size, as when cooked food was more largely used and strong muscles were less needed, while the bony prominence known as the malar, on the cheek, had not diminished in size as did the associated muscle. The skin on the soles of infants' feet are thicker than elsewhere due to a long series of generations of pressure, while hardness is developed on animals in different parts according to mechanical use. Corns and callosities are of this nature and are quite variable. The change of environment may not only cause variability but a change that will create species or families very different from the ancestral. In great sea depths are blind and other fishes with phosphorescent organs that give out light, and they also have enormous stomachs. Soft and flabby and often with starting eyes, when they accidentally come to the sea surface, at their usual levels they are compact. Deep sea fish certainly live at a depth of 2,750 fathoms. Cave fishes are also found to have lost the use of their eyes, and members of the same family are marine, and among the latter are two rare species found at great depths in the southern oceans which are also completely blind and are provided with phosphorescent organs. There is a ribbon fish of the deep sea and a "frost fish" which is said to commit suicide by stranding itself on shore. A phosphorescent sardine lives in great depths and ascends to the sea surface at night only. Their phosphorescence serves to guide such fishes and to attract prey as the

torch does for the fisherman. Rudimentary parts occur in animals through disuse. For instance, man has three little muscles attached to his external ear that are of no use to him, but in apes and other forms with movable ears these muscles serve to move the ear upward, backward and forward. A slender muscle alongside of the calf of the leg is so useless that its tendon hangs unattached, while it was of considerable importance in lower forms as an aid in climbing trees by contracting the foot like a hand clasping. Chickens have this plantaris muscle well developed to enable them to roost. Cows and similar ruminants, or animals that chew the cud, have front incisor teeth under their gums that never appear, and this indicates that they descended from ancestors which had front teeth. Whales have quite rudimentary teeth that are never cut, and from this fact and others it is known that whales come from a land animal that had well formed teeth. Beneath the skin of a snake-like reptile there are small legs that never appear on the surface. The only possible significance of these undeveloped legs would be in their having been useful to the progenitor of this snake-like reptile, but had ceased to be so in the descendant. Just as active brains served their possessors to amass riches which handed down to heirs who had no particular use for brain activity served merely to raise incapable idlers. Some monkeys have no thumbs and there is a tendency of the last joint of the big toe of oranges to be shed, the toe not being so useful in grasping and useless parts being inclined to cease growth. There is an ape called the proboscis monkey that has a ridiculously large nose of no possible use to him and a positive deformity. It is apparently a survival from some source, or an extra growth such as corns and warts. The nipples of male quadrupeds are instances of rudimentary organs. Monkeys can move their scalps up and down and a few human beings can also do so, but in most the power is lost, while the muscles concerned in the movement remain in an undeveloped state. The ear muscles mentioned are as rudimentary and useless in the chimpanzee and orang as they are in man. The horse has a sheet muscle called the panniculus carnosus, enabling it to shake flies off its body. Man has a rudiment of this same muscle around his neck and in general parts of his skin, but can make no use of it. The anatom-

ical name for it is *platysma myoides*. The vermiform appendix is rudimentary in man, affording the modern fashionable disorder called appendicitis. In the Kaola this branch of the intestine is three times as long as the body and is also long in vegetable feeders. By change in habits this appendix becomes shortened to a dangerously small rudiment sometimes causing death. It is better developed in women than in men. Mankind differs from other primates in being almost naked. Most men have but little hair on their bodies while women have only a fine down. These hairs are a rudiment of a former general hairy condition which occasionally recurs in some people. Downy hairs may be developed into stiff long coarse hairs near an inflamed surface and long hairs in the eyebrows may be inherited, resembling those of the chimpanzee and macacus. On the sixth month human embryo there is a fine furry covering called lanugo, which first comes on the face and eyebrows at the fifth month and around the mouth, where it is longer than on the head; arrest of hair development with teeth abnormality may be followed by lanugo hair returning in the adult. The back wisdom teeth tend to become rudimentary and do not cut earlier than the 17th year in the adult, and in other ways show their differences from the other teeth. In some lower races these teeth are sound and resemble the others in regularity and serviceability. The prostate gland at the base of the bladder in man is a rudimentary uterus and after the sixtieth year of life occasionally gives great trouble and distress by enlarging. There is great variability in rudimentary organs because being useless they are no longer subject to natural selection, they often become entirely suppressed, though by reversion they may reappear just as moles on the body are reappearances of part of the ancestral monkey-like skin and hair. The main cause of rudiments is disuse at a period when the organ is chiefly used, usually at maturity; a diminished nutrition, as by a cut off blood supply, may also make an otherwise active organ rudimentary. Natural selection by developing certain parts may render other parts less useful, whereupon they are liable to become rudimentary. Organs in the process of development need not be permanently rudimentary, and such may be called "nascent" or capable of development. A child's organs are generally in this formative stage and

the majority of human beings may be said to have nascent brains, inasmuch as they have allowed them to remain unfilled with knowledge, and unexercised as apparatus of thought. The Japanese also could be considered a nascent nation until the United States led them out of their seclusion and gave them a chance to use their very capable but latent, unused, abilities.

The similarity of pattern between the hand of a man or monkey, the foot of a horse, the flipper of a seal, and the wing of a bat, show the relationship and derivation of species one from another. Mere superficial inspection or a careless glance will not enable these likenesses to be seen, but a very little study of the internal parts of these appendages will convince you that they are built upon a single plan. But still more striking are the resemblances between the unborn young of the man, dog, seal, bat, reptile, bird and fish, so that at certain stages these embryos can hardly be told one from the other.

Ernst Hæckel traces the evolution of plants from the lowest formation to the highest during the geological periods called Laurentian, Devonian, Coal, Permian and Triassic, as furnishing respectively the simple to the complex growths of vegetation known as algæ, mosses, ferns, conifers, and flowering plants. In his very interesting History of Creation he also gives an account of the animals in their geological succession from the oldest formations of the earth's surface to the more recent. Thus the vast multitude of back-boneless animals date from the Laurentian period; the Cambrian furnishes the headless animals, the Acrania, a step higher; the Silurian age gave us eels, sharks, ganoids; the Devonian brought the bony fishes, the amphioxus or "lancelet" is found to date from the Coal period; during the Permian the reptiles appeared, and some of them developed into birds in the Triassic epoch, while in the Jurassic there dawned upon the higher animal life the great division of mammalia.

The growth of the plant from the seed and of the animal from the egg is an evolutionary process and is technically called ontogeny or individual development, and the evolution of a higher form of existence from a lower form, whether plants or animals, is called phylogeny. Ontogeny or the individual growth is a rapid, brief copying, in a few months or years, of phylogeny, or

the history of what has taken place through sometimes millions of years, in the lifting of the higher from the lower kind of plant or animal.

Heredity, which transmits like peculiarities, and adaptation or nutrition, in the environment or surroundings most suitable to afford such nutrition, are strong factors in this building up process both for the individual and the race. One of the often used questions intended to confuse the evolutionist was: "If man descended from monkeys what has become of the tail?" No claim is made that man is descended from monkeys by any well informed evolutionist. That both the monkey and man come from similar ancestry is all that can be properly claimed, and as to the tails, the four higher apes, namely, the chimpanzee, orang, gibbon and gorilla, have no tails, neither has the Barbary macaque which is a much lower animal, and by way of return to an original condition it occasionally happens that the little bones called the coccyx, at the end of the spine of man develop into a well-defined tail. This Barbary macaque or magot is the *pithecus* of the ancients, described by Aristotle. It was dissected by Galen and threw light upon human anatomy, and from it came the knowledge of anatomy secured by the Greeks. The whole subject of why some monkeys have tails and others have none, and why some tails are short and others are long is enveloped in great obscurity. All monkeys that swing by their tails are American. This ability to grasp limbs by the caudal appendage is called prehensile, so that old world monkeys do not have prehensile tails while the new world monkeys own them. But monkeys are not the only animals thus provided, for two lizard species from Jamaica and Columbia also have prehensile tails. The various kinds of monkey's tails are classed as prehensile, drooping, curling over the body, bushy like the squirrel, short like the pig, lion-tailed, and no tail, as in the higher apes and macaque. Darwin remarks that when the beard of man or monkeys differs from the hair of the head the beard will be lighter in color,⁴ and quotes Catlin's estimate of eighteen out of twenty North American Indians being beardless, and when there is neglect to pluck the hairs at

⁴ Descent of Man, p. 304.

puberty a soft beard may appear an inch or two inches long. In both sexes of these Indians the hair of the head is long.

Beards are quite variable in different races, and among ourselves, and the different kinds of beards and the want of them Darwin describes at length.⁵ Apes and monkeys are four-handed, that is, they use their feet to grasp with and to climb trees, and this ability of clutching with the feet is seen in young human infants and in some adults of low races, like the Cingalese. Monkeys do not hibernate but are active during all seasons; some of them are expert swimmers. In some the thumb is missing, the hand of the ateles being used as a hook to swing from trees; the thumb has become useless and this species sometimes conveys food to its mouth with its tail. The long arms of the orang are adaptations to the necessity for tree climbing, just as the longer legs of man are better suited to life on the ground. All the monkeys have two breasts like the human except the aye-aye of Madagascar, and the teeth are the same in man and monkeys. The man-like apes and the Siamang have hair on the forearm that runs toward the elbow as it does in man, and it has been suggested that the dripping of rain from the elbow point through vast ages finally fixed the direction of these hairs. The calves of the legs are more developed in the gorilla than in any of the other man-like apes. Generally speaking there is a greater relative size of the brain and that part of the skull which contains it, in the monkeys than in other animals, but the lower monkeys are not equal in intelligence to the higher flesh eating animals. The marked differences of appearance between the monkeys are associated with corresponding mental differences. The larger species' resemblance to man is more marked in the young than in the adult, while the females have more human characteristics than the male. This is due to the general resemblance between all the higher apes and the human infant, changing somewhat with age, and the females of all species retaining youthful peculiarities.

The most intelligent of all apes is the chimpanzee, specimens of which have been exhibited at times in our larger cities, but they do not live many years in captivity. They sleep in trees and make a covering over their heads like a hut to shelter them

⁵ Op. Cit. p. 306.

from rain. They do not eat flesh but feed on nuts and other fruits. They have been observed sitting around abandoned camp fires which they do not know enough to replenish. Old accounts made them very hostile to negroes who travel in the same forests, and their strength was said to be very great. Africans claimed that troops of chimpanzees chased and beat elephants with their fists and sticks. In captivity they are gentle, intelligent and affectionate, and soon learn to feed themselves with spoon, glass or cup, and are quite playful. One of them called negroes "bun, bun, bun." They sleep upon their backs and in many other respects resemble human beings.

Hæckel derives all apes from a half-ape form, and from these developed the flap-tailed, flat-nosed apes, from whom came the silky kind and the clutch-tailed American apes, which ended that particular bough of the family tree. The tailed narrow-nosed apes gave origin to the cynocephalus baboon on one finished branch and the cercopithecus on another branch. A more important offshoot between these two afforded the tail apes on one twig and the nose apes on another, and from these tailed narrow-nosed apes sprung the important anthropoids or man-like apes, from which came the African man-like chimpanzee and gorilla at the highest end of that particular branch, while a parallel branch divides into the gibbon and orang, a totally distinct branch originated the ape-like speechless man, and this branch split into two divisions according to Hæckel's classification of the human family into straight-haired and woolly-haired races of men.

Both man and the man-like apes are thus regarded as diverging branches descended from a common ancestor which has long since become extinct. This ancestor or half-ape was as unlike any living ape-like animal as the apes of today are unlike men. Nor is it required that we should believe our progenitors to have been any single set of half-apes or lemurs. Many such lemurs similarly and favorably situated may at the same time or through long separate periods of time, have become the parents of other ape-like forms which developed the different races of men, and these tribes could also have appeared separately in regions far distant from one another without necessarily owning a common origin or having emigrated from some far off land. Like causes

produce like effects and it is simpler to conceive of man appearing in Australia, Africa, Europe and Asia independently, developed from separate ancestry, even though in later ages crossings occurred and the races ceased to be distinct.

There is a white race of lemurs in the moist regions of Madagascar and a black race in the dry regions. Milne-Edwards and Grandidier mentioned the remarkable diversity of races and species of different lemurs, so that a small river may separate markedly different kinds of these half-apes. The distribution in France and England in the early part of the Tertiary of fossil lemurs indicates the prevalence in those countries of a tropical or sub-tropical climate at that time. Fossil gibbons are found in the fresh water strata belonging to the middle portion of the Tertiary period in France and Switzerland. So that part of Europe must have had a hot, moist climate like that of the Malay archipelago of the present day. Other kinds of monkey fossils are abundant in Europe later in the Tertiary, though there are no gibbons after the Miocene division. Fossil apes are not found further back than the Miocene age, but man-like apes are found in the Miocene rocks.

The chimpanzee of Africa was considered the highest in intelligence of the four higher apes, but Hæckel in his later researches announces the gibbon of Java as superior to all apes and regards it as the nearest living relative of man among the animals. He speaks of it as man's first cousin. In 1866 Hæckel declared that man was descended from an ape-like animal and described a missing link in the chain of evolution, which he named *pithecanthropus*. In 1894 the remains of this creature were discovered by Dr. Dubois in Java, who named it *pithecanthropus erectus*. There existed once an Asiatic ape, now extinct, who became the progenitor of *pithecanthropus*, the gibbon and the orang outang. The descendants of *pithecanthropus* evolved into man, but the gibbon remained as he was. He seems a sad animal, timid, melancholy and intelligent, fond of children, with a strong tendency to jealousy and all the other human emotions. The Java specimen is called *Hylobates leuciscus*.

The great collection of islands south and southeast of Asia called the Indian or Malay archipelago includes the large islands

of Java, Sumatra and Borneo. It was in Java that Dr. Dubois found the remains of *pithecanthropus erectus*, a missing link, and judging from the geological formation in which the bones were found the *pithecanthropus* is thought to have lived about 270,000 years ago. These islands also contain the only existing families of the Asiatic man-like apes, the orang and gibbon. This near relative of ours is pleasanter in manners than are the other high apes. Whether these islands of the Malay archipelago were formerly connected with the main land or not it appears that this vicinity was favorable to the development of higher animal life. There is a stretch of tropical forest from Borneo and the Malay peninsula to the Himalaya mountains, and this region suggests itself favorably as the home of the primitive ape-man who descended from the *pithecanthropus* of Java. Wallace shows that a large part of this region of southeastern Asia with the islands of the Indian Ocean affords abundance of the same kinds of animals. Other parts of the world may have been favorable to the evolution of men-like apes and varieties of ape-like men, but the best adapted place on the earth's surface appeared to have been the Himalaya range from southeast to northwest and the high plateaus of Thibet and the plains southwest of the Hindu-Kush mountains near the northwest part of the Himalayas. Darwin places the divergence of man from the catarrhine, sharp or narrow-nosed apes as occurring in the Eocene period in a hot country. The sadness and timidity of the gibbon may be ascribed partly to its gloomy forest life and being surrounded by hosts of fierce animals from whom it must protect itself, and added to this the violent convulsions of nature frequent in its early times made this lower part of Asia an uncomfortable district. The proboscis monkey is very likely a creature of sexual selection. Ideas of beauty vary even among men and a startlingly large nose may have won attention and preference of the sexes so that mating with the less prominent nosed apes went out of fashion among them until that species was well founded and achieved its greatest and only distinction, for it amounts to little in other respects. But with *pithecanthropus* a less prominent nose coupled with alertness was more in favor and so both natural and sexual selection developed along the intellectual line these earliest progenitors of man.

A solemn old rascal is the sacred monkey of India, the Hanuman, Hulman, named by Cuvier, *Semnopithecus entellus*. The Hindoos credit it with all sorts of impossible powers, a kind of Perseus and Prometheus in one, as it is said to have delivered a goddess from a giant's captivity and to have presented the mango to India. The pious Hindoo never molests it but allows it the run of the garden and house where it destroys to its heart's content. English officers feel compelled to suppress the nuisance and intelligent natives approve of so doing, but the pious would as soon kill a human being as one of these sacred animals.

Wild animals that avoid mixing will often, when domesticated, cross, as can be observed when the various kinds of dogs mingle, the original Eskimo dog being merely an arctic wolf, the Indian dog a prairie wolf, the Nubian a jackal, the ancient lake dwellers also domesticating that animal. The horse of Asia and Europe plainly arose separately from the American horse, the fossil evidence showing that in the west territories of the United States the horse began as an animal the size of a cat, remains of which are found in the Wasatch beds of Eocene times. Later on *mesohippus* attained the size of a sheep, the next growth, *protohippus*, had a skeleton closely like that of the present horse, into which *protohippus* grew in Pliocene times when there was no man to ride him. All the American horses died off before the European stock came over. The few herds of wild horses in New Mexico and that vicinity descended from cavalry animals lost by Cortez and later Spaniards in Mexico. Professor E. D. Cope of Philadelphia found the earliest five-toed horse progenitor of the later kinds, and a remarkable thing about it was that it was a flesh eater, so circumstances must have compelled the recent horse to subsist upon grass. As to the simultaneous or rather independent evolution of life in far distant parts, though there may be a remarkable sameness of appearance of these separate forms, there is found the same variety of lichen in the antarctic as in the arctic regions and it is more likely that they developed from similar than from the same causes.

One can picture to himself mountains thrust up from a hot sea with tropical forms of both plants and animals becoming arctic forms as they came out of the ocean and climbed the ranges

through ages measured by many hundreds of thousands of years, certainly time enough for some sort of changes to occur, even though the change were from crawling to flying lizards and these finally into birds, the mountain sides affording all sorts of inducement and opportunity for such metamorphosis and the fossils found in rocks proving that such things did occur. So gradually hot blooded animals appeared from cold blooded ancestry; the reptiles being furnished exterior heat and such animals as were able to furnish their own caloric internally were able to do more and to develop widely and higher in the animal and mental scales, until hot blooded birds soar through the clouds and hot blooded man scaled the glaciers and became master of the world, though at the cost of much effort and multitudes of slain marking his temporary failures. The mountain sides have seen the four-footed progenitors of man, the man-like ape and the ape-like man next in descent, speechless animal man finally learning to talk and to use better and still better tools and to make his surroundings better as his mind developed, and all this took vast periods of time, hundreds of thousands of years. The remains of an ancient civilization scattered over the west coast of South America, the Isthmus and Mexico point to Honduras, Yucatan and Columbia as centers of such life, though its remoter source was in mountain ranges more or less adjacent, the Andes; the high plains of Thibet doubtless were the abode of the fathers of the Aryans who slowly ventured down into the Oxus valley as the hot sea went down and the melting glaciers made a river far wider than any we know of today, the sea still falling leaves fertile plains for thousands of years upon which these Aryans browse their flocks, but finally the crumbling mountains made so much sand that blows over the grassy plains and forms the deserts, the inhabitants are compelled to leave, and so Europe came to be settled, but not wholly from that people. To the south there were also highlands near Armenia where the stock probably originated from which came many of the subsequent dwellers in the great Mesopotamian valley, with a history very like that of the Oxus region, the Euphrates filling the wide expanse and the Semites coming down from where their legends locate their paradise, the Persian plateaux, the waters going farther, with

an occasional return, affording the legend of the flood; finally two rivers, the Tigris and Euphrates, developing from the one wide one as the glaciers melted and the valleys became fertile, and eventually bad times, through climatic and soil changes and eternal fights with the wild Kurds, made Babylonia too poor a place to live in, so its folk scattered elsewhere. These Aryans and Semites have made all the important history of the world, as far as civilization, with which we are familiar, is concerned. Just so the ancient great Ural mountains extending northward to the Arctic ocean could have developed the Tartars along the Ural river as the Caspian became an inland sea from the receding of the primeval general ocean, the Altai range north of China bringing up the Mongols, with whom the Tartars mixed to afford the later Ural-Altain people, who bothered the Aryans and Semites to the south so much.

The Norwegian ranges and some others may have similarly seen the appearance of indigenous men, but the probabilities are that the Aryans killed them off, and it seems likely that other Asiatics than Aryans preceded and mixed with these aborigines, but they shared the same fate when these masterful travelers from the Oxus put in an appearance. They were the fittest to survive.

The Atlas and Abyssinian mountains might just as readily have begun some of the African races, and also ranges farther south could have raised Hottentots and other blacks, the subsequent intermarriages of races about the Mediterranean accounting for varieties of complexions. Furthermore, some of the less favored races may not have developed until their ancestral forms had come down into forests or plains at low altitudes, which may account for darker complexions in some cases. The high cold ranges affording the more intelligent white races, the hot moist forests other peoples in some instances.

Darwin⁶ ascribes the greater size, strength, courage, pugnacity and even energy of man as compared with the same qualities in women to primitive times. A frequent disposition of man to be willing to fight to the death for the woman he loves can be referred back to such early days, and the so-called chivalry of the

⁶ Descent of Man, Ch. XX., pt. II.

middle ages was thus aroused and survives today in a less bombastic and otherwise improved form. Beards Darwin regards as appendages transmitted to males by sexual selection as the sweeter voices of women were similarly transmitted with their denudation of hair.

Primitive times favored sexual development more than recent days because man was guided then more by instinctive passions and less by foresight and reason. Darwin concludes that of all the causes which have led to the differences in external appearance between the races of man and to a certain extent between man and the lower animals sexual selection has been by far the most efficient. Carl Vogt⁷ vigorously discusses the claims of the monogenists, or those who believe that different types have arisen from a single individual, as in the wrong, that different continents may have simultaneously produced representatives or similar species, and that we should not accept a single center of creation for all animals.

Wallace⁸ accepts Croll's hypothesis that the glacial period began about 200,000 years ago and adopts Sir Wm. Thompson's conclusion that the crust of the earth cannot have been solidified much longer than a hundred million years and that Prof. Haughton's estimate of the time required to produce the thickness of the stratified rocks of the globe, 177,200 feet, at the present rate of denudation and deposition is only twenty-eight million years. Four million years can be assigned to the Tertiary epoch and sixteen million for the time elapsed since the Cambrian, according to Lyell, or sixty million, according to Dana. The twenty-eight million arrived at from the rate of denudation and deposition is midway between these.

Wallace considers the present climate as exceptionally stable and that species are also stable in consequence. He discards the well-nigh limitless geological periods and far fetched inter-continental bridges and temporary islands and the hypothetical Lemuria of Hæckel, and inclines to regard the present continents and ocean basins as permanent. American geologists are familiar with the idea of the origin of the North American continent from

⁷ Westermann's Monatshefte, 1881.

⁸ Island Life, 1881.

the Laurentian nucleus and its gradual building up by sediments derived from the waste of its own rocks, and keeping pace with it was the evolution of its flora and fauna which borrowed nothing from the old world, though South America may have exchanged some forms. It was not till the Tertiary that the American and Asiatic continents nearly met, so that interchanges of forms were slight, if any.

Simultaneously with the growth of North and South America the Europeo-Asiatic, African and Australian continents are presumed to have developed with their characteristic assemblages of plants and animals.

The American continent had its own marsupials, tapirs, cats, dogs, horses, camels and monkeys, independent of those arising in Europe and Asia; and Cope⁹ regards this independent evolution idea of Wallace and Vogt as explaining matters simply, which otherwise could not be explained. During the glacial period when the American and Asiatic continents approached each other there may have been migration and interchanges, which render the life in the northern hemisphere so different in the Quarternary from that of the Tertiary. With the modern facilities for mixing of species and the driving out of the unfittest there are rapidly occurring extinctions, as of the buffalo in America, as the aurochs was driven from Asia and Europe. A remnant of the British black rat, almost entirely exterminated during the last hundred years by the brown Norwegian rat, is carefully protected and preserved on an estate at Greenlees, Montgomery. Natural selection is in favor of the sparrows and against the survival of the wrens, who are driven away by the sparrows.¹⁰ There is a natural rotation of crops of forest trees due to the soil being successively better adapted with the climate and the presence of certain seeds to the growth and propagation of the successive sorts, the oak following the pine, so that alternate sections of the Northern Pacific present the two kinds of forests, due to the oak springing up where the pines had been cut away.¹¹ Wallace¹²

⁹ American Naturalist, April, 1881.

¹⁰ T. McIlwraith, American Naturalist, Aug., 1883, p. 894.

¹¹ American Naturalist, 1886, p. 521.

¹² Natural Selection.

regards the development of the human race under the law of natural selection and refers to the influence of external nature in the growth of the human mind, whereby the inhabitants of the temperate regions are superior to those of hotter countries and all changes for the better coming from the north. He refers to this matter of natural selection operating in the extinction of lower races, and in originating the races of men; he discusses its bearing upon antiquity, as the cause of man's dignity and supremacy. Wallace gives his view of the brain of the savage, his range of intellect, the origin of his moral sense, of consciousness, and surveys the antiquity and origin of man.

The Chinese are capable of some instruction when young, but their brains appear to crystalize as a survival of conditions common to their very remote ancestry, and no further progress can be made with them. The Japanese are immeasurably the superior of the Chinese.

In Syria they still plow with the same kind of crooked stick of prehistoric days, they thrash grain by hoofed animals walking on it and winnow by tossing the grain in the air to let the wind blow the chaff away, and yet barbarous, ill-smelling, superstitious, uncomfortable, picturesque and dirty old Syria is regarded as holy ground by civilized people. Encouragement of extensive pilgrimages to the land of lepers, liars, thieves, superstitions and unwashed, may do away with some of this time-honored reverence. By survival we have the absurdity of ancient hatred as between Celt and Saxon continued even after the Celt has become in many cases Saxon and the Saxon being Celt, exchanging their racial hatreds also under the mistake of the Saxon often being Celtic and the Celt being Saxon. Touching the hat is a survival of the former custom of lifting the hat. The wedding ring is a relic of purchase, and bracelets survive from the manacles of female slaves. Louis Napoleon succeeded because other national parties in 1849 were quarreling, and they adopted him as a compromise, because they thought he would prove imbecile or a mannikin, and from the hatred of the legitimists, Orleanists, Bonapartists and Socialists grew up the MacMahon control. Seton-Thompson remarks that every animal has some great strength or it could not live, and some great weakness or

the others could not live. The squirrel's weakness is foolish curiosity, the fox's that he cannot climb a tree, and the foxes made up for their weakness by defter play. The fox's axioms are; Never sleep on your straight track. Never take the open if you can take the cover. Never take a straight trail if a crooked one will do. If anything is strange it is hostile, and human babies are frightened by strange things, so they have likely inherited this trait from very distant animal ancestry. Little foxes instinctively fear the scent of man without knowing why. Dogs when water-baffled run up and down both banks to regain the scent. Reason mingles with instinct in such instances. Animals have been known to commit suicide when captured and to destroy their offspring when they cannot release them from the trap.

While man often influences the disappearance of a species he is as frequently unable to diminish its numbers, as in the case of twelve million rabbit skins being yearly imported from New Zealand, and Australian canneries of rabbits are increasing and so are the rabbits. In Argentina the rodent coypu was killed for its fur and became so scarce the government stopped its slaughter and it increased rapidly till a mysterious disease made it nearly extinct again.

Some races of men have remained apparently unchanged for ages, preserving their original savagery, their crude arts and imperfect implements, their tribal customs and superstitions from periods probably hundreds of thousands of years back. The Turcomans and other Asiatics of Turkestan and especially the Kafristans are thus primitive. They are free but not united beyond a few families, they have no recognized leaders but occasionally defer to some one of influence. And it seems anomalous that free-born Americans should ever covet or glorify the conditions of far off India, but the Theosophists and Occultists and similar ignorant and foolish fanatics have been imposed upon by the lies of their teachers. Hear what an educated Hindoo said of the things that survive today in his country:

Swami Vivekananda, after a trip to America and Europe, returned to India and told his people some unpleasant truths in "The Indian Mirror." He told how the old Vedic religion had been defiled by the low races that accepted Buddhism until it became

"one degraded mass of superstition" with the most hideous ceremonials, the most horrible, the most obscene books that human hands ever wrote, the most bestial forms that ever passed under the name of religion. He told them that they were physically and mentally weak, lazy, selfish, no three combining without hatred, jealous of one another, hopelessly disorganized mobs fighting one another for centuries whether a certain mark is to be placed this way or that, writing volumes upon volumes on such questions as whether the look of a man spoils my food or not.

The "Independent" then says, "And here in this country are mannish women and womanish men looking to India for light where this man who knows India from Hardwar to Cape Camorin sees only in his own capitals "the most rotten superstition in the world."

Millions of instances of such survivals could be cited in our apparel, our customs, manners, etc. Earrings are survivals from savagery, and the waning of this kind of decoration promises that radical changes will evolve in the dress of both sexes. A century ago the male was as gorgeous with gewgaws, lace, silks and ribbons as a modern ball-room belle, and, as there is a reason for everything, as before mentioned, the cause of the growing modesty of man in this respect is that the gentleman found himself outdone in display by every vulgar fellow who could command a fortune. His footman aped him and in sheer disgust a more modest appearance was adopted and has now become distinctive of the gentleman, while ancient costumes and gaudiness are relegated to the lackey. Within the recollection of most old folks now living the sleek doeskins and broadcloth of our grandfathers and fathers have been discarded because butlers and waiters wore them. The ladies can be heard resentfully calling attention to the peacock silks and expensive sealskins of the cooks and housemaids. We merely copy the workings of all nature in these particulars; learning by experience that richness of costume is no evidence for or against the worthiness of its wearer. As the world grows older it grows wiser and individuals will come to be appreciated for what they are, not for what they possess, and this is one species of social evolution.

There are survivals in ceremonies, fashions, habits, dress, ornaments, opinions, notions of marriage, property, and law. The best man in a marriage ceremony today survives from a time when the bride was captured by the groom and his friends. Criminal law grew out of private vengeance, only the state is now the avenger. The public prosecutor stands in the place of the avenger and often he has the ancient grudge against the prisoner, right or wrong. Some people keep up the savage disfigurement of tatooing. Civilization tends to suppress ornament altogether. As Tyler says, the unconscious evolution of society is giving place to its conscious development.

You may have wondered why "off and nigh horses" are on the wrong sides as you sit in your seat to drive them, but when you realize that the terms are survivals from old postilion days when the ridden wheel horse was on the left side and was therefore the nigh horse, and the right hand horse was hence the off horse, you understand that your right hand seat in the wagon has not changed the old names, in spite of their inappropriateness now.

CHAPTER VI.

HEREDITY AND DEGENERACY.

From many Alpine peaks stream out, thousands of feet in length, what are known as cloud-banners. They seem to be perfectly steady, even though a strong wind may be blowing over the mountain tops.

"Why is the cloud not blown away?" asks Tyndall. "It is blown away," he answers; "its permanence is only apparent. At one end it is incessantly dissolved, at the other end it is incessantly renewed; supply and consumption being thus equalized, the cloud appears as changeless as the mountain to which it seems to cling. When the red sun of the evening shines upon these cloud-streams, they resemble vast torches with their flames blown through the air."

But the cloud is still there, new vapor is condensed, whitened, and swept onward, as the social swarms persist even after the death of members, and as they existed before such members were born. It is the aggregation of atoms in certain ways that make the molecule; and the peculiar combinations of molecules in other shapes that make inorganic substances. All that exists, living or inert, depends for what it can do upon what it is made of, and how it is put together. Function is not possible without structure; the plough cannot do the work of the locomotive, even though placed upon the track. Given the structure and the environment, which is structure again, and function will take care of itself.

The drops that form the cloud-banner, as well as other meteorological appearances, pass on, and new drops come, but the original form is there so long as the environment, the influences, are unchanged that called the form into being. We die, but our places are filled by others, who act as we did, think as we did, because they resemble us, and the closer the resemblance the greater is the probability of identical action. Twins often think alike, act the

same, and are subject to the same ailments, particularly if subjected to the same conditions. It is but a superficial objection that this is not true in all instances, for where the rule apparently fails it is because there are unknown failures in resemblance, internal perhaps, but none the less potent in causing like forms to have like functions, unlike to have diverse workings.

The mere matter of descent does not necessarily involve inheritance of feature or disposition of the immediately preceding generation; reversion sometimes takes place to remote and unknown ancestry likeness, but wherever resemblance extends to minute details of brain, heart, blood-vessel, and other structure, the two who are thus made alike will act alike, and that they do so is a matter of common knowledge.

And so it is in all things concrete and abstract: "Like causes produce like effects."

E. C. Hegeler, of La Salle, Illinois, wrote an excellent essay on the subject of form constituting individuality, and his explanation deserves a far wider circulation than it obtained through the "Open Court" publication.

When we consider the billions of molecules estimated by Sorby, of the Royal Microscopic Society, in a single drop of albumen, and the later estimation of between 5,000 and 6,000 atoms in a single molecule of this substance, it does not take very much imagination to see how the foundation of any sort of animal shape up to man himself with all his features, emotions and intellect, may not only be transmitted but differ in species and varieties by the various groupings of the atoms made possible through the immense number in a single molecule, and the vast number of such molecules in the seed or germ of the plant or animal, regardless of the size of the organism, for even the invisible could have millions of molecules.

Goethe¹ says in a little poem beginning "Vom Vater hab' ich die Statur":

"Stature from father and the mood,
Stern views of life compelling;
From mother I take the joyous heart
And the love of story telling.

¹ Bayard Taylor's Translation *Zahme Zenien*, VI.

"Great grandsire's passion was the fair,
What if I still reveal it;
Great-grand-dam's pomp and gold and show,
And in my bones I feel it.

"Of all the various elements
That make up this complexity
What is there left when all is done
To call originality?"

Some such boast may be heard that "I can trace my ancestry to my great-great-grandfather's great-great-grandfather. He was a cavalier and fought under Charles I," and, says Duncan Rose, "What does that amount to? That was the eighth generation before you and in that generation you had 128 forefathers and 128 foremothers, 127 of whom you do not know and some of them may have been hung for murder or sheep stealing." Princes, dukes, etc., came from commoners and their grandchildren became commoners. William of Normandy from whom so many like to claim descent, was a bastard. Cousins of the fifth degree alone exceed 2,000. Ancestry, unless kin intermarry, contain 2 parents, 4 grandparents, 16 foreparents in the 4th generation, and so on, increasing in geometrical progression whose ratio is 2. The number of progenitors in the 10th generation is 1,024 traced to Elizabeth's time, and in the 20th in the day of Edward I 1,048,576, and going as far back as the Norman conquest 25 generations ago each person would today have had 33,000,000 and over of ancestry, so there must have been intermarriages to have lessened this number.² O. W. Holmes³ attacks the fallacy of the descent in general, as popularly regarded, and the claim that hundreds of criminals have come down from Margaret Jukes, when considering the people among whom her immediate descendants associated, were of her kind, it merely amounts to communities being produced similar to their ancestors. Nor is it always the case that offspring resemble their parents, for they may revert to their remoter forebears in person or disposition. The sons of Charles Martel divided his kingdom, but one resigned to become

² Duncan Rose, *Pride of Birth*.

³ Elsie Veirner.

a monk and another was deposed and the third was able to hold on to his throne only through the pope's friendship. Charlemagne's successors did not have his genius or energy. Five in seventy-five years bore the imperial title in decaying rule. In Germany the family became extinct, in France they were ousted by the Capets. The Western Empire decayed and fell to petty Italian princes through grabbing squabbles of small politicians. Often the hero leaves progeny who inherit none of his traits. Oliver Cromwell's son was timid and gladly escaped the cares of government. He was the very reverse of his father in disposition. William Franklin, the son of Benjamin, was an obstinate royalist governor of New Jersey. He was arrested by Congress, released on parole and sailed to England. Oscar of Sweden was broad, democratic, philanthropic and unselfish. His son is royal and narrow-minded. So if people wish to be well ruled they had better not depend on good kings having good sons to govern them. Many an immense organization, good and bad, with a person of striking individuality at its head, has gone to pieces when it fell to the descendants to perpetuate it.

Racial peculiarities can be perpetuated by intermarriage and clannishness. Traits possessed in common by relatives become intensified by interbreeding and may even arise to national distinctiveness. The more a single purpose is developed to the prejudice of other functions the more difficult it will become to adjust to new purposes, and this adaptability in certain directions and failure to adapt to other directions will be transmitted if the influences have existed through many generations. Jews are poor farmers, sailors and soldiers, but excellent merchants, and to this may be attributed their scattering throughout the world and their abandoning Palestine.

It is a matter of common observation that Hebrews, as a rule, are more than ordinarily devoted to their families, and their home life is beautiful in many ways. As everything has a cause, the most plausible one in this regard appears to me to be the severe persecutions to which that race has been subjected for centuries, compelling clannishness and affording them their greatest happiness at home. Persistent influences acting through numberless

generations would surely institute a racial peculiarity such as this.

Darwin⁴ ascribes great weight to the inherited effects of use and disuse for both body and mind and to the prolonged action of changed conditions of life, but he allows for occasional reversions of structure.

The correlations of growth whereby parts of the body will vary in sympathy though not apparently directly connected are merely instances of association of organs though the relations may not be understood at the time when noted.

Hæckel's law of heterochronism in an organ or function appearing before its time, out of the order of its inheritance, is illustrated in little girls nursing dolls because the maternal instinct appears ahead of the possibility of its exercise. But imitation of elders has greatly to do with this play at caring for babies. The vicissitudes of inheritance may be illustrated by a savage having married a civilized female, through which union there were two girls, one with savage and the other with a milder disposition, but on developing later these two exchanged resemblances to their parents. Another generation by persistence of civilized influence lost much of the savage, but there would be lapses of individual descendants occasionally to the savage forefather resemblance. Handwriting may be inherited. Temporary impressions of the parents, such as mental states, occurring for a short while, could have very little weight in determining structure as opposed to the influence of long ages of ancestral structure breeding. So character is often the result of many centuries rather than of accidental paternal influence, so far as the race is concerned, especially. The occasional feminine antipathy to cats is probably inherited from arboreal ancestors who had to fight wild cats, and hatred of snakes is doubtless inherited though often imparted.

There may be an accumulation of anomalies in a certain definite direction by heredity, so that a typical structure may become an anomaly and an anomaly become typical, as a dialect may become a language and a language drop to a dialect. Man may

⁴ Preface Second Edition *Descent of Man*.

spread from tribes to races and the latter drop to tribes. Osborn⁵ shows the relations between development, balance and degeneration. The thirteenth rib recurs by what Gegenbaur⁶ calls "neogenetic reversion," for it is simply the anomalous adult development of an embryonic rudiment.. Galton says: "Although it is pretty well ascertained that in the masses of population the brain ceases to grow after the age of nineteen or even earlier, it is by no means the case with university students." The classification of heredity, especially with regard to insanity, but equally applicable to character and other peculiarities, includes the immediate, where the inheritance is from the parents; mediate, when from grandparents; simple when either paternal or maternal, the latter being the most important and three times more common; cumulative when from several generations; double when through both parents; direct when in the line of descent; collateral when in a side family branch; homochronous when peculiarities are at the same age in the ancestor and descendant; anticipatory if earlier in the latter person; similar or homologous if the resemblance is close; dissimilar or transformed if unlike; progressive in intensification of peculiarities through intermarriage; regressive if the peculiarity is diluted; reversionary if further back than a grandparent; latent if a generation or more is skipped by a peculiarity. We inherit from our sound ancestry as well as from the unsound; were this otherwise the entire race would be unsound.

Specialized animals have a more commonly generalized ancestor, suggesting the evolution of the diverse from the uniform, varieties from a common progenitor, or, as Spencer would say, the heterogeneous from the homogeneous. General abilities, generalized emotions and intellect may be inherited, such as determination, or force of character, sympathy, musical inclinations; but the particulars are not inherited, they are merely more readily developed owing to the predisposition for them. So capacity is transmitted but the education is not, that must be acquired, but the capacity peculiar to families make education all the easier for their children. Galton⁷ refers to Darwin's mention under hered-

⁵ American Naturalist, June, 1892, p. 455.

⁶ Morph. Jahrb. Bd. VI., p. 585.

⁷ Hereditary Genius.

ity,⁸ that mental qualities, special tastes, habits, general intelligence, courage, good and bad temper, are certainly transmitted, and genius also. Much inconsistency might be seen by a superficial examination of such claims that only general abilities are handed down, and yet special abilities also appear, but a homely comparison may suffice that brain and brawn may make a good blacksmith, and his offspring will be adapted to blacksmithing very likely; they did not inherit the trade, but the suitability for the trade. If, however, with but little interruption, a hundred thousand generations of blacksmiths occurred in a direct family line blacksmithing would develop as a general ability instead of a special.

Early marriages were frequent in Hungary and the Magyars married their sisters, so the stupidity of the descendants of those who did so is readily accounted for by the immature stages of fecundation and too close inbreeding. It is conceivable that close inbreeding would affect a higher organism, such as higher apes and man, or a refined breed of horses or dogs, more than it would animals less high in the scale, because the later acquired faculties, the tenure of which is so uncertain, are likely to be obliterated and reversion to occur to the ancestral stock, because the elements derivable from changes of stock, within certain limits, are cut off by inbreeding, and faults are intensified as well as common peculiarities. Early marriages also deprive the developing embryo of chemical constituents, such as molecular possibilities confined to more mature periods. Under French control the Egyptians were not prolific because the same old natural disadvantages continued, but when the British regulated the Nile flow so that great regions of country became fertile, the fellaheen sprang up like rank weeds, and were able to get more wives, food and cigarettes, and so far as numbers are concerned the Egyptian is increasing, as did the Hindoos under the same government.

If half the race is degraded the entire race will suffer. If women are repressed, as heretofore, and as low oriental conditions allow, and kept uneducated and from opportunities to advance, then the children of both sexes will suffer from inheritance and faulty training of the mothers whose care is the most important

⁸ Plants and Animals Under Domestication.

for the young. The color of hair, eyes and complexion in the order named can indicate race origin better than other things. Language is of the least importance. To tabulate ancestral inheritance it would be well to record in children when the hair and eyes changed color, and the weight of heredity, not the sequence always, might then be found, but it would seem justified to infer that children with yellow hair, blue eyes and fair complexion show Aryan as their first or remotest peculiarities. Darker hair and eyes and other colors and the darker complexions, it is likely, came from other races than the Aryan. The significance of so many children of Germanic and Celtic races being blue eyed and yellow haired could be that the Aryans were their far off ancestry. Subsequent complexions point to crossings with other races. Intense blondism may savor of yellow dog reversion to the jackal in a few cases. Not much attention has been paid to progenitors and descent, but with modern ninety-nine year leases increasing there will be inducements for descent to be more carefully recorded, and interest will change the former carelessness of preserving family trees.

Darwin⁹ records that the plumage of the young is not as a rule so conspicuous as that of the parents. Variations arising later in life are commonly transmitted to the same sex. Mental inheritance is often associated with the appearance, for a child may inherit features from a parent and also resemble that parent in disposition. We do what our anatomical make-up compels us to do, a certain brain shape entails a certain character. It is conceivable that if the tissues of either parent were adjusted to alcohol that the germ and sperm cells would be so modified that at the time of the first drink the adjustment would be found to have been made in the offspring, and the taste was thus arranged for ante-natally. This defect or want with a physical molecular basis may be carried to the extreme of producing idiocy or feeble mindedness. Two totally distinct families of frogs took to an arboreal life and became so like one another that we have to depend on anatomical differences to tell them apart. This shows how like environment may produce like effects and modify differing species. Goethe indicated the existence of an underlying law or plan

⁹ Descent of Man, Vol. II., p. 179.

in pointing out that all forms are similar though they differ one from the other.

Democritus expressed the idea of pan-genesis in suggesting that the seed of animals was derived from all parts of the bodies of both sexes and that like parts produced like, and Buffon revived this idea of heredity two thousand years later. Spencer suggested "physiological units" from the body-cells of the parent forming the germ cells and then developing into the body cells of the offspring. Darwin postulated a circulation of minute buds from each cell, each body-cell throwing off a gemmule containing its characteristics, which concentrate in the germ cell. Galton contributed experimental disproof of the blood circulating gemmules, and Prof. Brooks¹⁰ regarded the ovum as a cell designed to be a storehouse of hereditary characteristics, each characteristic being represented by material particles of some kind; thus hereditary characteristics were handed down by simple cell division, each fertilized ovum giving rise to the body cells in which its hereditary characters were manifested and to new ova in which these characters were conserved for the next generation. Weismann disregards many facts to confuse himself and others with words and refines and elaborates the continuity of germ cells, a notion which is "as old as the hills." As the successor of metaphysical ways of thinking the biological can only supplant it by a thorough chemical knowledge which biologists in general appear to prefer to get along without. A proper regard for such very actual entities as atomic and molecular combinations in the building up of both the germ and sperm cells, will make clear many otherwise mysterious phenomena.

The lowest organism contains in its combined germ and sperm cell given off by fission, a mere continuation of its own substance, so that the continuation theory is true for these primitive forms. In the evolutionary scale the higher animal is a more complex organism, made up of molecular combinations grouped together in mechanical and chemical complexities, in an orderly, evolved manner, step by step. When one step in molecular growth and union of molecules had been taken, another step was possible, and it is this sort of potential, this latent pos-

¹⁰ Law of Heredity, 1883.

sibility, that is transmitted with the ovum given off, that constitutes all there is in heredity.

For instance, the simplest descent is by the parent parting with a piece of itself. The next step is when cells take upon themselves the function of elaborating the molecules of the parent that are to produce the offspring, and next differentiation of the germ and sperm cells occur, the germ cell to afford the main mass of parental pabulum, or basic molecules, and the sperm cell is left more free to elaborate the higher grouping of atoms and molecules and their tensions or tendency to attract further atoms in regular sequence, so that when the sperm and the germ cells are united the fecundated ovum is started on a career of molecular tensions and attractions, or affinities for substances to be picked out of its environment, the maternal tissues of all kinds, not blood alone, in the order of possibility of building up, imparted and copied from the history of the race, the tribe, the family, the species.

If the atoms a, b, c, d, e, f constitute the highest form of molecular construction of potential protoplasm and a and b the lowest, then c, d, e, f are acquired evolutionarily. If the atoms are not in the environment and not found in the order acquired; if one, say d, is absent, then a break occurs even though others are present. If all are present then all may be taken up in sequence.

So, if, to simplify matters, salt is a necessity to the evolving tissues and organisms, both the ancestral form and embryo will have affinities for salt that will ensure its presence in nutritive fluids such as blood, lymph and amniotic fluid, so the organism may be said to carry its environment, in this case a salty fluid, with it in gestation; and so if the chemical constituents which are main factors in the evolution of the organism are present also with the embryo, then ontogenesis is chemically identical with phylogenesis, individual with race history.

Cope's law of acceleration lops off or abbreviates stages. So salmon seek fresh water and eels salt water to spawn, caused probably by the salmon's ancestry being, for an important period, fresh water fish and eels originally having come from the sea.

The heat needed to build the egg into a chick apparently moves the molecules about and enables chemical interchange. Plant evolution and development from seed similarly consists in an

aggregation of atoms set in motion by heat and moisture to afford the necessary rotation and combination.

How diseases are inherited was discussed in *Science Progress*, August, 1896, and reference was made to Pasteur's pébrine disease of silkworms in which definite sporocysts were transmitted from the imago, or perfect insect, by way of the egg cell and that the larva was directly infected in this manner. It has often seemed to me that indirect transmission is more common through the inheritance of a predisposition, which simply means that the soil is the same in the ancestor and the offspring, upon which the same kind of germs find lodgment and are thus enabled to thrive.

The reasons for reversions through crossing, such as the wilder offspring of a negro and Indian mixture, appears to me to be through acquired traits when recent and weak depending upon freshly created microscopic brain and nerve development which being alike in the sexes of the European are transmitted to the children, but being unlike or missing in other races, such inside features are not handed down by inheritance.

When two races who are both low in the scale cross the result is eminently bad. Half castes are said to be "made by the devil." When mules are wild they have striped legs like their ancestry.

As the right of private vengeance is a recognized one among Asiatic tribes and similarly crude customs render such people incompatible with civilized society, whenever one of the civilized marries into such an ancient community his offspring is liable to revert to the lower stock because it was common to all our races, as mongrel dogs go back to the yellow jackal.

The students of the Latin Quarter annually celebrate their mid-lent carnival, and elect a queen from the Parisian washerwomen. The students' motto is "Folie et Charité." A collection of the photographs of these queens, each is called "Reine des Reines," compares favorably with portraits of veritable queens. Owing to the selection of the better looking these washerwomen look better in their regal clothing than an equal number of female members of reigning families.

Megalomania, or big head, could naturally be the form of insanity of unbridled sovereigns even to the subversion of regard for parents, as little Wilhelmina of Holland exhibited when she

compelled her mother to pick up her dropped bouquet and Wilhelm of Germany parades in his dislike for his mother. Wilhelm has made public claims to divine inspiration and asserts he has mastered all the arts and resents criticism of his productions. In the Baltic he sermonized on his yacht in churchly robes and likes stage effects as Nero did with similar claims to omniscience. An Arab swindled him by selling him some costly "Moorish steeds" that turned out to be common horses, and he went into a maniacal fury that came near ending in the stable men tying him up with vulgar stable ropes. His delusions of persecution after being struck by a lunatic were quite well known. He prepared his army to kill off all in Berlin if necessary to protect him. Nicholas of Russia is a mystic and tends to melancholy brooding, at one time falling into the clutches of a French humbug clairvoyant. He is surprisingly superstitious in spite of his wide reading and opportunities for information, certainly a reversionary trait to worse times. Alfonso of Spain also treated his mother shabbily and gave his ministers and bishops trouble by his loftiness and sneers at "holy" matters such as relics. A wiser king, from policy, would not have publicly scoffed even though he did not assent to priestly tricks, though more can be dared than formerly, for intelligence is beginning to spread even in Spain.

The madness of Otto of Bavaria ended in his killing the celebrated Dr. Gudden, a more useful man than Otto could ever have become, and committing suicide at the same time. He came from insane stock. The Hapsburgs and Bourbons have face and other peculiarities due to heredity and the Jews are thus similar through intermarriage.¹¹ Joanna of Aragon was weak-minded, jealous, and before becoming ungovernably mad in 1496, married Philip whom she poisoned. Her sister Catherine was the mother of Bloody Mary of England who showed the moral insanity and ferocious bigotry of the other Spanish Hapsburgs. A granddaughter of Joanna's went mad and her son was demented. A Portuguese queen descendent of a sister of Joanna went raving mad. Numerous children of Ferdinand and Isabella were sickly and died young. Joanna's son, Emperor Charles V of Germany was sound mentally till later in life when he became melancholic.

¹¹ Races of Man, 1876, Oscar Pascal.

Philip II, his successor, was one of the most gloomy and ferocious bigots the world ever saw. He was content with nothing but wholesale murder and extermination. Don Carlos, his eldest son, was furious and ungovernably vicious and finally died insane. Rudolf II, of 1576 to 1612, son of Maximilian II, had uncontrollable passion followed by abject submission to his advisors, the Jesuits. Rudolf II, Don Carlos and Ferdinand II had equally odious characters with Philip II. To the ferocious bigotry of Ferdinand II may be ascribed the thirty years' war, one of the most hideous wars of history. More than twelve million people perished in strife, wolves tore through the burnt and deserted villages; men killed their children and dug up dead bodies for food, and before its close Germany was exhausted. Ferdinand was treacherous, cold-blooded and diabolical, and a tool of the Jesuits.

Peter the Great was furious, cruel and savage, sometimes spending an entire day as executioner, cutting off his subjects' heads. He was epileptic like Mohammed, Napoleon and Swedenbourg, and flogged his own son Alexis to death. Peter II, the grandson of Peter the Great, repeated every vice of his grandsire and was assassinated by order of his wife, Catherine II. Paul I was also done away with for being as bad as Peter. Alexander I escaped the insanity but the ignorant frustrated his plans to do good.

George III is said to have had the same form of insanity as his ancestor, the Duke of Cella, in the sixteenth century, 200 years later.

Th. Ribot¹² remarks that talent, power, wealth are ephemeral, for degeneracy, which is always fatally inherent in that which rises, will again lower them or their race, while the silent work of the millions will continue to produce others and to impress upon them a distinctive character.

W. W. Ireland,¹³ in his admirable writings, reviews the matter of the insanity of the Claudian-Julian family, Augustus, Julia, Tiberius, Caligula, Claudius, Messalina, Agrippina, Nero, Domitian. The Empress Charlotte of the French-Austrian attempt to grab Mexico, sister of the Belgian King Leopold II lost her reason in 1867 upon the death of her husband Maximilian who was

¹² Diseases of Personality.

¹³ The Blot Upon the Brain.

captured and shot by the Mexicans. The list of crazy royalty could be indefinitely extended. Ireland speaks of the insanity of power. Certainly where mankind has become better suited to be governed than to have unlimited power an unstable brain could readily break down when all checks upon folly, cruelty or extravagance were removed. But when bad heredity is intensified by intermarriages despotism and degeneracy are at their worst, and what can be said of people who allow such monsters to rule them?

Wallace notes¹⁴ that health, strength and long life are the results of a harmony between the individual and the universe.

The correlation of growth causes hairless dogs to have imperfect health, while cats when blue-eyed are deaf. Small feet accompany short beaks in pigeons. The most basic instincts are capable of inhibition through training, as in the case of a man dropping dead from starvation through unwillingness to accept charity. Of course insanity accounts for numberless perversions of that and other kinds. It is degeneracy indeed when the maternal instinct fails as when the yak in Lincoln Park, Chicago, kicked its infant away and it became necessary to feed it on cow's milk.

Poor William Cowper the poet, Mary Lamb and her brother Charles Lamb, belonged to the host of imperfect human beings classified as degenerates. Byron was both mentally and physically defective, but it need not be inferred that all who achieve anything in this world are degenerates, nor that mediocrity is proof against mental disorder. As to degeneracy of institutions many that were started to benefit mankind have attracted the sneaks who perverted the funds to their own private use or substituted a completely different, often antagonistic, end for the original intent of the organization.

The sea squirts were free swimmers when young but became attached as adults. Oysters are degenerate molluscs whose ancestors were free swimmers. The flat fish with migratory eyes that transfer from opposite sides to the upper part of the fish, are degenerate, as are the blind cave fish who show evidences of their ancestral optic apparatus. Any new set of conditions occurring

¹⁴ Natural Selection.

to an animal which renders its food and safety very easily attained leads as a rule to degeneration, just as an active, healthy man sometimes degenerates when he becomes possessed of a fortune, or as Rome did when possessed of the riches of the ancient world.

Let the parasitic life be once secured and away go legs, jaws, eyes and ears, the active, highly gifted crab, insect or annelid may become a mere sac, absorbing nourishment and laying eggs.

Languages degenerate, high civilization has decayed. By studying the conditions likely to set up degeneration we may avoid that fate for our race.

Seton Thompson says that the mongrel yellow dog is an attempt of nature to restore the ancestral jackal, the parent stock of all dogs. The scientific name of the jackal is *Canis aureus*, which means yellow dog, and not a few of that animal's characteristics are seen in his domesticated representative, for the plebeian cur is shrewd, active and hardy and far better equipped for the real struggle of life than are any of his thoroughbred kinsmen. The reversion sometimes is more complete and the yellow dog appears with pricked and pointed ears and is liable to develop the deadliest treachery. Seton Thompson tells of a mongrel collie¹⁵ raised as a sheep dog who, faithful at first, afterwards became a savage, treacherous sheep killer. Another yellow dog led a double life as a faithful sheep dog by day but was a bloodthirsty devourer of far-off neighbors' flocks by night, too smart to attack his own master's sheep. Such instances are more common than are supposed. Seton Thompson secured accounts of six collies of this kind, one of whom added to his nightly amusement the crowning barbarity of murdering the smaller dogs of the vicinity. He had killed twenty and hidden them in the sand pit.

Where the outside of the heels of shoes are worn, due to weak ankles or where there are bow legs, there is a resemblance in the gait to the waddle of the climbing apes, and as they preceded man and his present method of walking the waddle and bow legs are reversions to our tree-climbing forefathers, except where rickets is the cause, then the degeneracy is even worse. The ability to grasp with the foot and toes is monkey-like and atavistic or reversionary. There are instances of arrested development,

¹⁵ Wild Animals I Have Known.

post-natal as well as pre-natal rather loosely included as degenerates.

Reversionary sense of smell in some defectives suggests the query, Are savages better developed in olfaction? A reversionary in St. Louis told his friends by their personal odor, and some imperfectly developed children have this peculiar ability which should be discouraged whenever found. There are racial tendencies to retrogression. History is full of examples of nations after gaining certain degrees of civilization, losing it more rapidly than it had been acquired. Arts and laws were forgotten and their descendants in Asia, Egypt and Central America wander through the ruined halls of their ancestral palaces without a glimmer of tradition of their past greatness. Many Spanish and Portuguese in America sink to the lowest levels.

Hysteria is a form of degeneracy. No matter what necessity others may be under to get a living or to hasten to work the hysterical demands services as imperiously as though her selfish whims were the most important things in the world and every one else had business of no consequence. It is dissolution or reversion or arrest to childishness so far as disposition goes. The mental reversion to ape-like inanity, and imitation, or to harmless uselessness is observable in many young club members. "Sissies," as they are called, who spend their time at trivial games and sipping drinks at club bars and addressing each other as "Deah boy," repeating idiotically certain phrases, never reading, and complaining that thinking gives them headaches. The cigarette is operating somewhat to kill off this degeneracy. Senility exhibits various phases of mental dissolution; an old lady of good literary attainments became lachrymose, fearful of death with no philosophical resignation and yet not religious. If in pleasant company she could appear like her former self. A literary training does not impart the resignation that science is so apt to afford to declining years.

Dissolution is a sort of analysis, enabling traits to stand alone, or in new relations, uncombined with others that may have concealed them.

In de Croisset's play "*Je ne sais quoi*" is shown the evolution or involution of an honest, loud, raw American girl, with bad

French accent, into a dishonest Parisian woman with a pure accent.

Dissolution uncovers bases and fundamentals unsuspected before. For instance, in mental disintegration the faculties that are capable of distinction, singly or involving certain other faculties, become apparent. Basic emotions are shown by the insane, such as exaltation and depression, delusions of wealth, power, persecution, poisoning, etc. When a rich man becomes poor he is astounded at the falling away of friends and at what he had previously considered fixed. He has merely seen the superstructure removed. When famine reaches a land, during shipwreck, when war comes, things appear in new guises, and you realize that you did not really know your friends before. In captivity, in prison, and in other afflictions the brute in man stands nakedly forth, and startling developments of some beautiful traits are sometimes disclosed that were all unsuspected previously.

During the World's Fair was the thief's opportunity for extortion, robbery, etc. During a crowded conclave once in Chicago water was sold to sun-stricken visitors by bartenders at fifty cents a glass. Nations during dissolution assume primitive characteristics. Opportunity discloses realities not imagined to exist previously.

Large universities, seminaries, etc., may in their early poverty-stricken days send forth their best results in graduates. Later when wealthy, fashionable boarding schools cultivating emotions instead of reason, athletics forsaking regard for mental training, may sap the intelligence of the pupils largely. The early Christians were sincere but rogues corrupted the church as it waxed rich. Tolstoy wrote feelingly on this subject. Secret societies often degenerate and have become nests of criminals, in extreme instances inducing governments to destroy the society and its members.

Degeneracy is observable in some business corporations where petty swindling, coupled with great extortion succeeds to the bribery of officials, with too great profits, such as a vast telephone company secures; the next step is a lowered tone of employes, their neglect of business and finally matters become so putrid that a receivership or competition follows, unless the patient public

continues to support the monstrosity. Coal conspiracies between railroads and dealers have threatened industrial degeneracy.

CHAPTER VII.

SUPERSTITION.

Definitions of superstition are always unsatisfactory, says Professor Joseph Jastrow. It masquerades in strange, sometimes pleasing garb, and it is not always easy to recognize it in its disguises. He refers to the historian Lecky having written a notable account of the struggle between superstition and reason,¹ and to the fact that streaks of superstition enter into the composition of each one of us, a most important thing to understand is that superstition is a natural inborn human trait. We deceive ourselves often into imagining that we have reasons for believing matters when they may be founded upon delusions, pure and simple. We welcome arguments that support a belief to which we are already, perhaps unreasonably, disposed. Lowell says: "The marvelous is so fascinating that nine out of ten, if once persuaded that a thing is possible, are eager to believe it probable, and at last cunning in convincing themselves that it is proven."

Current appeals to our fears instruct us not to spill salt, not to be one of thirteen at table, not to begin anything on Friday, not to look at the new moon over your left shoulder; that bad luck follows from meeting a yellow dog or black cat, passing under a ladder, opening an umbrella in the house, breaking a mirror; while good luck is secured by planting at certain phases of the moon, finding a horseshoe or gathering the froth on your coffee, as it represents money. Children solemnly tell each other that lessons will be missed if cracks in the pavement are stepped on, a sign made over the left shoulder enables a lie to be told without the usual consequences, tingling of your left ear means that some one is talking against you; and Jastrow, who has made a study of such matters, concludes that:

¹ History of the Rise and Influence of the Spirit of Rationalism in Europe.

"Possibly the surest index of the aliveness of these beliefs is that the attitude of childhood is sufficiently sympathetic with them to make children invent superstitions, and local variations of these or inventions of signs and interpretations of omens may be found wherever the spirit of childhood blossoms unrepressed. The lives of the less progressive portions of the community are likewise favorable to the persistence of unreasoning beliefs, and sailors, nurses and rustics will add a rich addition to the handful of irrational notions above cited. All this means that, where the rationalistic spirit is absent or undeveloped, the superstitious bent has a freer field, and as a rule improves his opportunities. Where these beliefs survive most vigorously there is least examination of their truth or plausibility, and there is a most ready acceptance of them by their natural appeal to a sympathetic temperament. These beliefs are cherished mainly—and yet not exclusively—because the persons who are attracted to them feel like believing them. They fit in with the general thought habits of the individual, and he believes in response to a temperamental impulse, and very, very little by virtue of any proof or experience that to him seems to justify the belief."

Fear and love are the emotions concerned in what has interchangeably been called by either name of superstition or religion according to bias or training, and the reasons why such fierce contentions have filled the world over creeds is that these same emotions are all powerful in their control of human activities, next to hunger, which is the dominant desire, and which frequently, in some of its derived forms of greed, love of admiration, love of power, etc., takes advantage of the superstition or religion it finds that it can impose upon and turn to its own selfish use.

Brinton holds that "the principle at the base of all religions and all superstitions is the same, and the grossest rites of barbarism deserve the name of religion just as much as the refined ceremonies of modern churches. The aims of the worshipper may be selfish and sensuous, there may be entire absence of ethical intention, his rites may be empty formalities and his creed immoral, but this will be his religion all the same, and we should not apply to it any other name."²

² Brinton, *Religion of Primitive Peoples*, p. 28.

The dog superstitiously howls at the moon or its shadows, with ruffled fur and trembling, and horses shy away from wheelbarrows from what causes some men to shy into church: fear of the unknown. And dogs take advantage of the awe in which others may stand by impressing their importance upon them, and many sermons, speeches and threats of humanity are to the same end as the bark of the dog.

Heroditus tells of the noise of the donkeys of the army of Darius stampeding the Scythian cavalry horses, as they had never heard the like, this and the terror of horses for steam road-rollers and other unfamiliar things is in the nature of superstition. Shrinking from danger, whether done consciously or not is a reflex associated with fear, and some exhibitions of superstition are due to this instinct. The sensitive plant folds its leaf when touched, the wild cactus spreads its stamens, and the polyp contracts its tentacles. So a reaction like this may be the nearest to what would correspond to dread in the lowest forms of life.

Max Müller³ refers approvingly to Rudolph von Jhering's book⁴ wherein the first Aryan home is located on the northern slopes of the Hindukush, where others had placed it before. Agriculture on a large scale there was not practicable and the mode of life was that of shepherds and breeders of goats, cows, sheep and swine, and this nomadic life was kept up on the march from their first to their second home in the southern parts of what is now called Russia. Gradually agricultural arts arose and that of manuring was regarded as so important that the Romans invented a god, Sterculius, to preside over the process of manuring. The plough was a large stick pointed like a hog's snout, drawn by men and women. He thinks that overcrowding, famine and epidemics drove the ancestors of the Greeks and Italians to Thrace, Asia Minor, Greece and Italy, and that the Celts were the next to follow, settling across the Rhine, while the Germans who came after took the other eastern side of that river. Those who remained in the second Aryan home were the Slavs. Some of the changes in languages may have been due to contact with the original inhabitants conquered by the Aryan speakers. The

³ Prehistoric Antiquities of the Indo-European, Cosmopolis, Sept., 1896.

⁴ Vorgeschichte der Indo-Europäer, 1894.

regular spring exodus of young people from Arya and later settlements became a sacred performance, the *ver sacrum*, there were many halting places between the Hindukush and the Caucasus, and a long rest in the so-called second home in the southern parts of Russia. Professor Jhering discovers in customs which are utterly unmeaning and absurd some former object which accounts for their origin. The *hasta præusta*, or wooden spear, was thrown into the enemy's country in declaring war as a survival from the time when there were only wooden spears; priests used stone hatchets in their sacrifices long after iron tools were common, just as the Jews still use a flint knife in circumcision because the original silliness was started in days when there were no other kinds of knives. At Rome there was a superstition of the kind with reference to the *Pons Sublicius*, a bridge which was under the special care of the Pontifices, and in repairing it no nail made of metal was allowed to be used, as when it was first built only wooden nails were known. The vestal virgins, "brides of heaven," did not use flint against flint to kindle their sacred fire, but rubbed wood together instead so their capers are thought to date from a period earlier than the stone age.

Professor Jhering sees in all these customs the tenacity of the Romans in preserving whatever was old and venerable, even after it had lost its original purpose. He looks for residua of customs which admit of an explanation during a period of migration, preceding the settlement of the Italian tribes, but which in later times are nothing but hollow formalities or superstitions. *Superstes* meaning what remains over Müller suggests *superstitio* in the sense of survival, or of something kept alive, though its original purpose is forgotten, and its real life gone. He traces the present name of the priests as bridge builders, pontifices, and their duties were occasionally to throw the aged over to the fishes to appease the river gods for having put fetters on the stream. Later these human victims were replaced by a manikin, *make-believe man*, the *argei*, made of bulrushes.

To determine serious questions the priests of old Rome would note how and which way birds flew, or inspect the entrails of animals, or watch a chicken eat, and such silly methods were gravely accepted by the common people as a child plays at "he loves me,

he loves me not." Jhering says there must be a reason in all this unreason, and ascribes the customs to peculiar circumstances of the Aryan migrations, that they were all originally for some practical purpose. The custom of regarding the sky in a senseless way came down from the need of watching clouds, winds and distant storms at midnight, to ascertain whether the next morning would be fit for marching or fighting or remaining encamped. The fact that leaders observed the clouds was noted by the rabble, but as they were unable to understand why this was done of course imposters arose to humbug them into paying for all sorts of pretended revelations secured in such and similar ways. This was the *signa de cœlo* which the augurs observed. They also had the *signa pedestria*, or observation of the ground, never explaining what they saw by examining the road, and in fact ignorant themselves that originally the scouts looked over the route for foxes that might eat chickens the emigrants took with them, also for snakes, wolves, etc.

To avoid contaminated water, poisonous plants, as grain, fruits or berries, fowls were watched as they were fed with such suspected articles, and so the appetites and often the intestines of animals were inspected to see if what the country produced were safe to eat. Cicero (*De Div.* ii, 13) is referred to in support of this explanation. When the original meanings of these signs were lost it became profitable to the haruspices to keep up the imitation of intestine examining and pretending to learn all sorts of things from it to get the pennies of the ignorant.

Jhering explains the *signa ex avibus* of the auspices, the watching of the flight of birds, as having originated in the leaders noting such flights to find passes in mountains, as birds would fly through them rather than over peaks.

Müller thinks the Aryan barbarians would not have been civilized had they not come in contact with the Semites, and this would account for European civilization coming from the Romans in contact with Semites in more ways than linguistically, explaining the loss by the Romans of their Aryan blue eyes and yellow hair, which the Germanic and Celtic savages retained till mixed with their captives from the Mediterranean regions.

Max Müller⁵ states that in 1845 two Roman Catholic missionaries, Huc and Gabet, were startled by finding in Thibet the sameness of the Buddhist and Roman ritual, and among other things the coincidences of the crosier, dalmatic, cope, the service with two choirs, the psalmody, exorcism, the use of censers held by five chains, which shut and open by themselves, blessings given by the lamas in extending their right hand over the heads of the faithful, the rosaries, the celibacy of priests, spiritual retreats, worship of saints, fastings, processions, litanies, holy water, etc. Instead of the Buddhists borrowing these things from the Christians it was found that the Buddhists had them long before Christ was born. Not only the matters mentioned, but such minor affairs as confessions, and so on, are mentioned in the Tripitaka, the bible of the Buddhists, and dates from the council of 259 B. C., when Asoka was king, as admitted by scholars without contention. A later date of 88-76 B. C., when the Buddhist laws were reduced to writing, answers just as well to show the Buddhist origin of the Roman Catholic ceremonies and ecclesiastical millinery.

The fable of the ass in the lion's skin is traced back to the Buddhists and other myths to ancient Aryan days.

Müller thinks that Buddha has been made a saint by the early Christians under the name of St. Josaphat. There are coincidences of Buddha's miraculous birth, the star over the house where he was to be born, the old Asita waiting for his advent, and dying after having prophesied the greatness of Buddha as the ruler of an earthly or of a heavenly kingdom, Buddha's temptation by Mara, the twelve disciples, his special love for one of them, Ananda, the many miracles ascribed to him and his outspoken disapproval of miracle-working. The story of the judgment of Solomon is under a different name in the Buddhist records, with the story ending "go and sin and no more," the story of the prodigal son, Buddha's walking on the river, and the feeding of the multitude on a single cake, with many cakes left over. Müller is really biased against accepting the origin of Christian ceremonies and teachings from ancient sources, but upholds ad-

⁵ Coincidences, Last Essays, p. 251.

mitting whatever shall be proven as the only honest course, regardless of results.

The man-like ape, the gibbon of Java, greets the rising and setting sun morning and evening with cries of "Hoo-lock or whoop-poo," and the natives name the animal from this sound. The monkeys with the absurdly long noses, the proboscis monkeys, assemble in large numbers in the mornings and evenings at the rising and setting of the sun. This custom with the greeting of the gibbons could be studied with reference to the Persian sun worship. Many species of animals and numerous tribes of men attach importance to the coming and going of the sun, moon and stars in different ways, but all with regard to emotions aroused by the changes of light and dark.

The principal god of the Parsees or Persians was the god of the sun, and the sun itself became an object of worship among them as with so many other early nations. This Mithras of the Persians is the Helios of the Greeks and the Apollo which the Romans acquired from the Greeks, and sun worship is clearly traced through all these names. Manes, the founder of the Manichæan sect, wished to identify Christ with Mithras.

Dogs may be observed turning round and round before lying down, and at other times scratching backward in a pretense of throwing dirt. These motions are ceremonial survivals from ancestral jackals who trod down the grass by this turning around process, and who covered excreta with earth. It is likely that Buddha taught the Hindoos to avoid touching water vessels with their mouths to prevent disease conveyance, but the precaution lost its original meaning and degenerated into a mere religious observance kept up simply because Buddha taught it and for no other reason, the caste regulation requiring the water to be poured into the mouth from the jar at arm's length.

Savages have repeatedly been terrified by seeing for the first time men on horseback, mistaking them for a single animal, and this originated the idea of the centaur, the mythological half-horse half-man. In this class of monsters, animals with six limbs, hexapod mammal impossibilities, we find angels with bird's wings on human backs, and there are no muscular or bony attachments for wings in human backs or shoulders unless we take

the arms away; there were also animals such as the bull or lion with man's head, the sphinx, and any quantity of men with animal heads. The Aard Vark or earth pig of Africa with the long snout can be the Seth of Egypt, and the Ant Eater of South America has a similar snout. The baboon was consecrated by ancient Egyptians to the god Thoth. Hermopolis was devoted to the worship of these animals and Thebes had a special cemetery or necropolis for their mummies. The ibis was also sacred to the Egyptians. It was domesticated and bred freely, but disappeared when unprotected. It was the emblem of Thoth, the Secretary of Osiris, and was embalmed for the temples in great numbers. It was known in India as the curlew. The Egyptian cat was venerated and embalmed, and its mummies are found in tombs. The natives of Madagascar fear the Aye-aye as having supernatural power. The secret by which it can be disarmed is claimed by a few persons, and this claim has in it a germ of a priesthood that can charge for protecting childish minds against imaginary evils. The tiger is regarded with superstitious reverence in Hindustan, and parts of the tiger are used as charms and others regard these relics as deadly poisons. Crocodiles were worshipped at Thebes, and the long-snouted crocodile was held sacred in many parts of India, where animal worship survived in temples with ponds where there were special priests for the "muggers" or crocodiles, to whom men, women and children were fed as sacrifices. In parts of India wayfarers have a semi-religious custom of tearing a strip off their clothes to hang on a tree, and it soon becomes loaded with rags and tatters, which the vultures use in their nest-making. Left handed spiral shells are rare and are sacred to the Hindoos and Buddhist priests of Ceylon and China; the rarity of the cowrie shell makes it useful as a money substitute in many countries. The four-leafed clover survives with a superstitious value to this day. The Ainos offer libations of saki to the head of a bear, and thousands of other instances of religious regard for animals could be cited. In South America the boa is eaten and its fat is regarded as medicinal, as some simple people today think beaver's oil is good for rheumatism. Skinks are lizards adapted to burrowing in the ground; they are short-tailed, and have the reputation among the Arabs

as being an infallible cure for almost all diseases. The flesh is used for food and medicine. The reptile gecko is supposed to eject venom from its toes and to leave the impress of its body on steel, and it is blamed as being the cause of leprosy by the ignorant Egyptians. In old England and down to comparatively recent days a misconstruction of the word barnacle caused the superstition to spread that geese were at times formed by barnacles, and there are old pictures extant of the goose-barnacle tree.

A hundred and twenty million Hindoos would give up their lives rather than harm should befall the Hanuman, the particular kind of monkey they regard as sacred. An incredible number of monkey asylums are kept up in India; sixteen hundred are in the presidency of Bengal alone, sustained by the poorest of people. The dog-headed Thoth was worshipped by Egyptians and the cat-headed god Pacht was supposed to preside over childbirth, and cats being sacred to this goddess the killing of a common cat was punished by death. Tons of cat mummies are dug up.

Sir John Lubbock⁶ treats of religion and tells of a Kaffir puzzling over natural events without result, but remarks that savages as a rule do not think out such things, but adopt the ideas which suggest themselves most naturally, and notes the tendency of authors to credit such races with higher ideas than they possess. He claims that the deities of savages are evil and not good; these gods are to be forced into compliance with man's wishes; they require bloody and rejoice in human sacrifices; they are mortal, not immortal, a part of and not the author of nature; they are to be approached by dances rather than prayers, and sacred dances are quite common with savages the world over; and these gods often approve of what we call vice rather than what we esteem as virtue.

We submit to deity, the savages try to control him; we regard the deity as good, they regard him as evil; we thank the deity for blessings, they think that blessings are natural, but attribute all evil to the interference of malignant beings.

⁶ Origin of Civilization and Primitive Condition of Man, Ch. IV.

Lubbock divides the stages of religious evolution into what can be essentially condensed in these words:

Absence of any notion of a god at first. •

A second stage where nature is full of demons who can be prevented from doing harm, Fetichism. •

Thirdly, natural objects, such as trees, lakes, stones. animals are worshipped (Totemism or nature worship).

Fourthly, the superior deities are more powerful than man and are of a different nature. Shamanism. Their place of abode is also far away and accessible only to Shamans.

Anthropomorphism comes next, or man-shaped idol worship, in which the gods take still more completely the shape of men, being, however, more powerful. They are still subject to being persuaded; they are a part of nature and not creators. They are represented by images or idols.

In the next stage the deity is regarded as the author of nature, and becomes for the first time a supernatural being.

Finally, as the last and highest stage morality is associated with religion, and Lubbock notes that Herbert Spencer regards moral feelings as the result of accumulated experiences of utility gradually organized and inherited.

Honesty has been associated with unhappy consequences and subterfuges, and lying dishonesty have been and are admired still by many savage and barbarous people as accomplishments, but while personal honesty has been found to be inconvenient the honesty of others is a thing to be praised and cultivated because honesty of others affords the happiest consequences to yourself, hence it should be taught to others and encouraged because benefit to self may occur from it.

Our ancestors, says Lubbock, have felt that some things were right and others were wrong, but at different times they have had very different codes of morality. It was right to steal from strangers or to murder them until finally it ceased to be the proper thing to do. Hence we have a deep-seated moral feeling but no decided moral code. Children have a feeling of right and wrong, but do not have an intuitive knowledge of what is right or wrong. A child whose parents belong to different nations with different moral codes may have the moral feelings, and yet

might have no settled ideas as to particular moral duties. It learns these from others. Authority seems to Lubbock to be the origin, utility and criterion of virtue. Parents, preachers or the law dictate what is to be considered proper, the child is not born with knowledge of it, but may desire to do what others regard as right. When the deity was regarded as beneficent then he became moral, and not before. Savages could not conceive of a good god, and this sacred character could not arise until morality had been appended to religion. Today among civilized people the masses entertain a mixture of beliefs in a deity, or several gods, who are good and evil, moral but revengeful, all-powerful, knowing everything, and yet idiotic in their exactions. The good person attributes all his moral nature to his deity, but authority bids him believe in a furious, dangerous, cruel demon, who is the same as the good god. Much primitive foolishness and clownish behavior survives in the estimation of the average deity of civilization.

Spencer supports Tyler's view that ancestor worship is a factor in religion origin, and ghost propitiation is a consequence, but Lubbock holds that primitive man had no religion. Ancestor regard could easily have arisen through the parental control compelling the children to abject submissiveness, which was eventually more or less an inherited condition, and among unprogressive tyrannical people it could become exaggerated, as with the Chinese, but among advancing nations such as the Americans this is reduced to parental affection, with at times too little regard for the advice of ancestry. Old men among savages teach respect for themselves and enforce it, but force would avail nothing where there is freedom of thought and public education.

Brinton⁷ says: "The lowest religions seem to have in them the elements which exist in the ripest and noblest, and these elements work for good wherever they exist. However rude the form of belief in agencies above those of the natural world, in a higher law than that confessedly of solely human enactment, and in a standard of duty presented by something loftier than immediate advantage, such a belief must prompt the individual to a salutary self-discipline which will steadily raise him with nobler

⁷ Religion of Primitive Peoples, p. 215.

conceptions of the aims of life. When he feels himself under the protection of some unseen but ever near beneficent power his emotions of gratitude and love will be stimulated, and when he recognizes in the ceremonial law a divine prescription for his welfare and that of his tribe he will cheerfully submit to the rigors of its discipline." Brinton traces the lines of religious thought through, first, the primitive social bond. Second, the family and position of woman. Third, the growth of jurisprudence. Fourth, the development of ethics. Fifth, the advance in positive knowledge. Sixth, the fostering of the arts. Seventh, the independent life of the individual. Speaking to the gods by prayer and the alleged speaking of the gods to the people were early developed means of supposed communication maintained by a variety of motives on the part of the teacher and taught. Fear, hope and to gain an advantage in some way were the main incentives. Captain Clark^s says: "No people pray more than Indians. Both superstition and custom keep always in their minds the necessity for placating the anger of the omnipotent and invisible power, and for supplicating the active exercise of his functions in their behalf." Stocks and stones, says Brinton, were never worshipped as such, but as having mysterious power to influence the future. This is idolatry, polytheism or fetichism, and a species of animism. The idol is something else than the mere object. The fetich spirit lives in a tree. If the fetich does not bring luck it is burned, thrown away, or broken. The sale of lucky talismans, mascots, fetiches, by one savage or another, has in it the beginning of priestcraft. The bethel of the Hebrews was a stone the god was supposed to inhabit. The holy kaaba of Mohammed is a rough black piece of rock, a substitution or reversion to the idol worship overthrown by his sect. The Phrygian image of the earth brought to Rome with great pomp was a small black shaped stone. There is a survival in our day of this ancient childishness in the belief in "lucky stone" mascots. Trees were supposed by some tribes to make the rain, an inference drawn by dripping moisture condensed by the foliage. The Chaldeans had a sacred tree. Innumerable are the ceremonies intended to avert the wrath and gain the favor of the gods of nature, and "solemn

^s Indian Sign Language, p. 309.

nonsense" exists in every land and among all degrees of culture.

Marriage and funeral rites soon become sources of profit to special classes who considered it their privilege to preside over the superstitions of the infantile minds of savages, and their descendants have been subjected to great inconveniences through the greed of many of this sacerdotal trust. For instance, in Puerto Rico and the Philippines the price of the marriage ceremony was so absurdly high that the benighted people were compelled to mate without it in most cases. Where there is direct profit in this there is often a more indirect one in civilized countries, but the Spanish provinces had not advanced to that stage. It was the immediate pay that was sought for religious services. To the Mohammedan every event of nature and life is an immediate manifestation of the power of God.⁹ Among barbarians and their ancestry echoes were mysterious, and a word had the power to do good or injury. Some Indians dread to tell their names for fear others will gain power over them through knowing their names. Some words are too sacred to pronounce, while others will defile the speaker. Some numbers are also sacred and our figures 7 and 12 retain much of this superstitious significance. The *carmen* or charm was a song to drive away demons, sometimes given with medicines, a certain class of which are called *carminatives* in this day. Virgil said that a special *carmen* could drag the moon from the sky. Resonant words like "*Mesopotamia*" thrill the simple devout.

Dreams are intimately associated with the lower forms of religion. During sleep the spirit seems to desert the body. And the great bulk of fairly educated persons in our midst are not aware that dreams are caused by improper action of blood vessels in influencing the registered memories in the gray matter of the brain. A healthy sleep is dreamless. Greenlanders believe in dreams and think that at night they go hunting, fishing and courting. When savages dream of dead friends or relations they firmly believe they have seen them. The beastly ventilation of the Eskimo hut is well calculated to poison the circulation and afford an extensive variety of dreams. Among uncultivated people dreams are regarded as omens and means of communication

⁹ Brinton, *ibid.*, p. 40.

between the gods and men. Savages ascribe pain as caused by their enemies, and the Australian thinks his sleep is disturbed or pain is caused by enemies he cannot see. So the delusions of persecution of some insane persons can be explained as an enfeeblement of the later acquired reasoning power that enables correction of these primitive impulses to account for personal discomfort, a reversion to savage brain state; in melancholia owing to the poisoned circulation placing the mental faculties in a dream-like state, and in paranoia through suppression of the logical process direct, often by deformity of the brain. The observation of shadows and reflections in the water of himself and others impress the ignorant wild man with superstitious dread. Kamschatkans, Brinton records, relate their dreams to each other every morning and try to guess their meaning. The Eskimos regulate their daily life by their dreams to a great extent. Some Brazilian Indians will vacate a camp if one dreams of an enemy's approach. Plants that caused delirium were sometimes taken to induce visions so as to get at the will of the gods. Often there is an association with some spiritual meaning of some matter observed and for which there was a name, such as breath, which on cold days these early progenitors of man could see in the frosty fog from their mouths. We have Max Müller's authority for spiritus being derived from spirare to draw breath. The same applies to animus from anima, air. The root is an, which in Sanskrit means to blow. Thus the Greek thyein, to rush, to move violently, originated thymos the soul, the Sanskrit dhu to shake. But "abstract names," says Sir George William Cox,¹⁰ "are the result of long thought and effort, and they are never congenial to the mass of men."

Granger¹¹ says "all mythology and all history of beliefs must turn to psychology for elucidation," and A. H. Post¹² holds that "These laws of human thought are frightfully rigid, automatic and inflexible. The human mind seems to be a machine; give it the same materials and it will infallibly grind out the same product. So deeply impressed by this is an eminent modern writer

¹⁰ Mythology of the Aryan Nations, Vol. I., p. 45.

¹¹ The Worship of the Romans, p. 7.

¹² Grundriss der ethnologischen Jurisprudenz, Bd. I., V. 4.

that he lays it down as a fundamental maxim of ethnology that "we do not think, thinking merely goes on within us!"

Brinton enumerates five special stimuli to the religious emotions:

1. Dreaming and allied conditions.
2. The apprehension of life and death from which arises the notion of the soul.
3. The perception of light and darkness.
4. The observations of extraordinary exhibitions of force.
5. The impression of vastness.

Religions, like organisms or institutions, have a natural history; they rise, spread and fade away, and just as each ignorant tribe fancies it is the only people worth saving or knowing anything about, so it claims to have the only true religion.

Benjamin Franklin defined superstition as religion out of fashion and religion as superstition in fashion. "Orthodoxy was," furthermore, "my doxy, and heterodoxy your doxy." There is no one belief or set of beliefs which make up a religion. Buddhism rejects the ideas of gods, souls, or divine government of the world; the Jewish old Testament and the old Roman religion did not admit existence of souls or immortal life. Some believe in souls and not in gods, while divine government is rare in savage minds. Savages do not, as a rule, recognize principles of good and evil or doctrines of reward or punishment hereafter for conduct in the present life." The happy hunting grounds are for those who are brave and kill enemies, and, among the Blackfeet, not for those who are hanged, but these are exceptions in the beliefs of multitudes of other savages.

Belief means a mere impression and also a conviction from evidence. An Irishman defined faith as that God given faculty that enabled a man to believe what he knows is not true. The "beliefs" of the past and present are beyond computation, but a general grouping is possible. Fatalism, for instance, pervades Mohammedanism, Calvinism and numerous other religions. The Greeks were firm believers in fatalism, and that man could not escape his destiny. Even today there are fairly intelligent persons who believe that the insane are possessed by devils. The American Indian sees his soul in the mirror or stream, the spir-

itualist sees telepathy proved by the x-ray. Shapes of clouds, volcanic eruptions, lightning and thunder, all unusual things, at once are grounds for superstitious dread. When such things become familiar and constant they often lose their superstitious interpretation. "Astonished at the performances of the English plow the Hindoos paint it, set it up and worship it, thus turning a tool into an idol. Linguists do the same with language!"¹³

"The religious inclination of man is part of his mental construction. In the nature and laws of the human mind, in its intellect, sympathies, emotions and passions, lie the well-springs of all religions, modern or ancient, Christian or heathen; to these we must refer, by these we must explain, whatever errors, falsehoods, bigotry or cruelty have stained man's creeds and cults, and to them we must credit whatever truth, piety and love have hallowed and glorified his long search for the perfect and the eternal. Missionaries would not recognize as religion the beliefs which were so different from and inferior to their own. Ghosts, magic and charms were superstitions. Religion is shown to have existed among neolithic men by numberless sepulchers of peoples, massive mounds and temples such as Stonehenge and Karnac, by tens of thousands, their idols, amulets and mystic symbols, their altars and talismans. But palæolithic man of the continental glacier period left nothing to show he had religion. The tabu means exile or death for taking prohibited articles of food and drink, for infringing laws of marriage and social relation, disposition of property and choice of wives. The Dyaks of Borneo consult their gods on all occasions of business or journeying. It shocked the Pueblos to see white settlers planting corn without any ceremony, and still more to see how the corn flourished. This did more to shatter their simple faith than a dozen missionary crusades. Some will not acknowledge that there is any religion whatever except their own, all other beliefs are heresies, apostasies and heathenism. A protestant denounces Roman Catholicism as superstitious, and Quakers regard all external rites as equally superstitious."¹⁴

¹³ Herbert Spencer, *Essay on Style*.

¹⁴ Brinton, *ibid.*, p. 27.

Edward Clodd¹⁵ summarizes myths as personifications of the powers of nature, as the sun, moon, stars, earth, sky, storm, lightning, light and darkness. The devil was the king of all the agents of disaster, disease, sorcery, wizards, enchanters, who had sold their souls to him. "It was not enough for the ignorant and frightened sufferers to accuse some misshapen, squinting old woman of casting on them the evil eye or of appearing in the form of a cat, to secure her trial by torture and her condemnation to an unpitied death. The spread of the popular terror led to the issue of proclamations by the pope and statutes in England and other countries against witchcraft, and it was not till late in the 18th century that laws against imaginary crimes were repealed."

There is a barbaric confusion of things with their mere names, and among a certain class of insane of the paranoiac type there is found occasionally a positive craze as to the mystic meanings of words, seeming as though this word reverence were a reversion to barbaric ancestral traits of many thousands of years ago. This is in such primitive minds associated with the belief in the medical or superstitious virtue of perfectly worthless things, the reality of dreams, a theory of disease being caused by demons, witches or sorcerers, the evil eye, etc., belief in a second self or soul, in the souls of animals, plants, etc., and in a soul's dwelling place. At times, as in India, there is found belief in the change of men into animals, and elsewhere is belief in descent from plants or animals. Myths arise secondarily from the use of equivocal words, the confounding and the misinterpreting of ancestral or foreign fables, just as children get things mixed today and pass them on. Such an instance occurs in the different versions in separate languages of the idea of the seven stars, the dipper, the plough, the great bear, etc., an account of which is given by Cox.¹⁶ There may occur a multiplicity of names for the same object, and each name becomes the groundwork of a new myth, as in the process of time they are confounded with words which most nearly resemble them in sound. There is a tendency to localize mythical incidents, and the speech of mythology is very elastic as it rests on tradition. The solar myth is probably most exten-

¹⁵ Myths and Dreams.

¹⁶ Mythology of Aryan Nations, Vol. I., p. 47.

sive, but there is a constant demand for new mythical narratives, and there is a great vitality in the myth-making faculties. A transmutation of names is the historical groundwork of the Homeric Mythology and the Iliad is the Volsung tale of Norse mythology. Mythical beings gradually become historical persons, and there is a great sameness about all tribal legends. Cox points to the likeness running through a vast number of the popular tales of Germany, Persia and Hindustan owing to the separation of races and re-appearance of old common legends from a time when the races were united in the Aryans.

In Assyria Bheki or the frog sun is represented by the fish sun to show half of his time spent above and half below the waves. This fish god is like the Aryan Proteus or Helios. As Oannes or Dagon, the fish On, he is the great teacher of the Babylonians, and his name is seen in the Hebrew Bethaon, the house of the sun. The archbishop's hat, resembling a fish's head with eyes and mouth of the fish, is a direct survival of the head-gear of the priest of Dagon, the fish god of Babylonia. The ancient Romans considered the river gods and the fish god very powerful, and fed their old people to them by throwing them from the bridges, and the bridge high priest was therefore called pontifex maximus from pons, bridge.

There is a vulgar inclination to degrade mythical beings to their level by savages; they can only conceive of gods as big men, and the big man idea is universal. The anthropomorphic attributes become adapted to the low instincts of the savages as their gods sink to their comprehension. Hence you can explain better to an Indian why the sun follows the dawn by telling him that each is like ourselves and governed by human-like motives, and that the sun chases the dawn because in love with it.

A mythology and a moral belief may go on side by side and struggle for supremacy in the primitive mind, according to the receptivity of the people, but the mixture does not mean that all are influenced alike by the same religion, for one may twist the mythology, as Lord Bacon tried to do, into moral interpretations, or even with full poetical fancy conceive only the base meaning, though the very words may imply higher ideas. Cox says: "The child who will speak of the dawn and the twilight as the Achaian

spoke of Prokno and Eos will also be cruel or false or cunning. There is no reason why man, in his earliest state, should not express his sorrow when the bright being who had gladdened him with his radiance dies in the evening, or feel a real joy when he rises again in the morning, and yet be selfish or cruel in his dealings with his fellows."¹⁷

From the old Aryan religion sprang those beliefs that were found scattered through Europe from Rome and Greece to Germany and Ireland. Dyaus, Zeus, Jupiter, Zio is the highest god among Hindoos, Greeks, Italiotes, Germans and Norse. The Semitic religions worshiped Bel or Bael, Belzebub, El, Malek, Adon, Sar as supreme. The Jewish Jehovah and Roman Jupiter have some superficial resemblances of sound and character, but were doubtless developed apart. Of course the Christian religion is that of a Jewish sect. The Egyptian appears to be a mixture of early Aryan and Semitic worship, while other African religions are those of the Cushite, Nigritoes, Kaffirs and Hottentot, in which sun and moon gods are prominent. The Chinese ancient natural religion is now partly superceded by Confucianism, the philosophy of Kung-fu-tse, who was merely a teacher, and Taoism, a revival of the old religion. Several centuries later Chinese Buddhism arose. The Japanese is a modified Chinese, and in the line between Asia and Europe was the Finnic branch of the Ural-Altaic religion. There are the aboriginal ideas of the American Indians, the Malayo-Polynesians original religion displaced by Buddhism, Mohammedanism and occasionally Christianity. The tabu abounds as a survival among them.

W. D. Whitney distinguished between religions founded by individuals and race religions. Zoroaster, Christ, Mohammed and Buddha made headway against degenerate notions. All of these, with Confucius and others, have been reformers who resisted degrading tendencies of the past priesthood. But in time these reforms also became corrupt, and in spite of a teacher refusing to be recognized as more than a man eventually the adherents would worship him. Pleiderer¹⁸ holds that religion was at first an indistinct naturism, in which natural things were re-

¹⁷ Sir George Cox, *Mythology of the Aryan Nations*, Vol. I., p. 39.

¹⁸ *Religions philosophie auf geschichtlicher Grundlage*, 1884, Vol. II.

garded as living powers; then followed the worship of many gods regarded as manlike in form and character; then came spirits in idol shapes, and finally the conception of one god in nature. C. P. Tiele¹⁹ sums up the stages as, first, one in which every object had life (animism), with multitudes of demons who could be controlled by magic. Next there were the many gods such as the Greeks and Romans had; sacred writings gave another shape to religion, and finally principles and maxims prevailed. Nature religions existed in which the oldest contained germs of the latest. Man regarded all nature as being alive and as having magical power. Some of these living things were monsters with frightful shapes, some of which survive in later mythologies, the sphinx, the centaur, the dragon, etc. This has also been called the polyzoic stage. A second stage of animism developed in which only the most powerful of these living things were worshipped, with spiritism and idolatry prominent. The first period of animism was that of a confused mythology in which there were many demons, polydemonistic, and some more powerful. A second period gave implicit belief in the power of magic, accounting for the high veneration in which sorcerers and fetich priests are held. Third came the predominance of fear over all other feelings and the performance of religious acts for selfish ends mostly. As when a Russian bows a thousand times to his icon to atone for some sin.

The purified magical religions were the connecting link between the polydæmonistic magic religion and the many shaped gods stage, anthropomorphic, polytheistic, animals, men, spirits mixed together. In this there were many survivals of the old, disguised under new names. The more recent ethical religions are Christianity, Buddhism, Mohammedanism, Confucianism, Mazdaism, Mosaism, Judaism.

Ethical attributes become ascribed to the gods, especially the highest; as ideas of people change and improve they are apt to assign better motives to their gods. Ethical abstractions and intellectual abstractions are personified and worshiped as divine beings. It is not so long ago when there was a serious proposal to make an apotheosis of humanity, and when Huxley was

¹⁹ Outline of the History of Religion.

asked what he thought of it he said that he would as soon think of making an apotheosis of a wilderness full of apes. But those notions occur in advanced stages of nature worship and are often incorporated with the old religions. Some are founded by one or more persons, in some cases by a body of priests or teachers, and he who first reveals it is asserted to be inspired, and it is said that the new ideas were revealed to him. Buddhism had an atheistic tendency, but Buddha was finally revered and worshiped as the Hindu supreme deity. The old Aryan was mostly anthropomorphic animism, the worship of man-shaped gods representing natural objects. A study of the mythologies of all peoples reveals how the simple minds of our ancestors tried to account for the beginning of things in wild and senseless stories, such as children would invent, of the origin of men, sun, stars, animals, death and the world in general. Pulling these gods down to their own understanding, they related infamous and absurd adventures of them, and this is why these ancient gods were spoken of as murderous, adulterous, incestuous, thievish and cruel, cannibals, and wearing the shapes of animals, and that they change into plants and stars or back to beasts again; also why there are such repulsive stories of the states of the dead, the descent of the gods to places of the dead, and their return.

The various religions can be concluded under either nature or ethical headings, the nature division including the greater subdivisions, such as polydæmonistic, magical religions under control of animism, many devils in nature, entertained by savages and uncivilized, and those who are degraded from better states, then the purified or organized magical religions as the result of some reformer getting control of the nonsense and compromising with the priests who lived on superstitions. The Therianthropic Polytheism unorganized contained the oldest Japanese, Indian, Arabic, Slavonic, Italiote, Græco-Roman, Etruscan and Finnish, while the later organized forms were found in Egypt, Babylon, China and America. A later worship of man-like but superhuman and semi-ethical beings, Anthropomorphic Polytheism, affords the ancient Vaidic of India, the Iranic of Bactria, Media and Persia, the younger Babylonian and Assyrian, the Semitic, Phœnician, Canaanite, Aramean, Sabea, Celtic, Germanic, Hellenic and

Græco-Roman. The other great class, the ethical religions, contain religious communities depending upon sacred books. These are Taoism and Confucianism in China, Brahmanism, Primitive Buddhism, Zoroastrianism, or Mazdaism, Mosaism, Judaism, and by natural selection there have arisen three dominant forms dividing the world between them—Islamism, Buddhism and Christianity.

As to primitive ideas Powell says the North American Indians are agitated over the questions, do the trees grow or are they created? Some take the ground that the great trees like the sequoia are created just as they are found, but all the other trees grow. Somewhat similar to the notion among some white people that man was created as he is found, but that all animals may have evolved.

Powell holds to four stages of mythology, whatever happens some one does it; that some one has a will and works as he pleases. Personality is the base of this philosophy. The persons are the gods of mythology. The world is a temple of gods.

1. In the lowest and earliest stage everything has life, personality, will, design; animals have all the power of mankind, all inanimate objects are supposed to be alive, trees think and speak, stones have loves and hates, the hills, waters and stars are alive. Everything is a god, hecastotheism.

2. Then follows discrimination between the dead and living things, between the animals and the inanimate, but the animals still have human traits: Zoötheism when men worship beasts. Everything is done by these gods.

3. A wide stage then develops between man and animals. The animal gods are dethroned; physitheism. The gods become strictly man-shaped, anthropomorphic. Hence there are gods of the sun, of the day, air and night, etc.

4. Mental, moral and social characteristics are personified and deified. Thus we have a god of war, of love, of revelry, of plenty.

This may be called psychotheism, which develops into one god worship, monotheism, and then pantheism, the one god being everywhere.

The invention or adoption of the alphabets runs parallel in

racess with psychotheism, and all these stages may exist by survival at the same period. As an outgrowth of mythological philosophy Powell mentions "ancientism," or the belief that yesterday was better than today, that the ancients were wiser than we, a belief quite universal. Yesterday is greater than today by natural exaggeration and absorption of beliefs from older generations. China is satisfied with ancient teaching only. So recent periods are considered as degenerate and man has become lower than he originally was.

Another outgrowth of superstition was the idea that the gods had families, and spiritism notions came from dreams in which there were strange scenes and wonderful activities, memories of scenes and experiences of former days and inherited memories of scenes witnessed and actions performed by ancestors are blended in strange confusion by broken and inverted sequences.

Great men when they die have a tendency to become worshipped as gods. The ancient Egyptians promoted their gods until Amon was made the biggest, and finally the kings succeeded in being worshipped just as they would today if they could, judging from Emperor Wilhelm's remarks. Then as the Emperor Hadrian caused Antinous, his favorite adopted son, to be worshipped as a god, so there was a direct creation of deities through mere imperial caprice. Conquerers often converted the gods of the conquered into devils, or when concessions had to be made the two religions mixed and old ceremonies took new forms and surroundings. The Christians permitted many old gods to be saints, and festivities such as Yule Tide, Noël and Weihnachtsfest and the Saturnalia passed into the new observances.

Indefinite old legends keep people on the alert for the predicted end of the world, etc. The Aztecs were overwhelmed with superstitious regard for the Spaniards, and Montezuma looked upon them as the predicted children of the sun who were to come from the east again, the former Quetzalcoatl. After Montezuma's death he took the place of the expected one in the minds of the simple Mexican Indians, and nowadays a watch is kept by a sentinel, who looks every morning to the sunrise for Montezuma's return. For four hundred years fires had been kept burning on Mexican Catholic church altars as part of the

old Aztec Montezuma worship surviving among new surroundings.

Very childish were some of the ancient notions that sufficed to found a religion. A great Chinese philosophy is based upon a system of three lines similar to the markings on the back of a tortoise and this inclination to symbolism we find among certain logically defective insane among the civilized.

Extensive religious movements have originated in conditions behind the apparent ones. Peter the Hermit and his harangues have been blamed for the first crusades, but the crying agricultural, social and political needs were the main incentives, and the church gave the impulse to the movements.²⁰

Devastating plagues that sweep the world originate in centres of densest ignorance, to be conveyed with lessened effect to relatively more enlightened parts. This relativity is with reference to increased cleanliness as to food, habits, intercourse, ideas, knowledge of the environment, and decreased religious fervor, disposition to be priest-ridden, dirty, credulous, superstitious, and brutal generally. The thoughtful, cleanly races are the breakers against which the pestilence rages in vain, and the bigoted, uncleanly, superstitious afford the materials for its increase and spread. The oriental pilgrimages to Mecca and the Upper Ganges are the means by which cholera is propagated. In these "holy" spots the multitudes of devout swarm and reek, the filthy "holy" wells from which they drink and in which they bathe have accumulated ages of defilement. Dr. Shakespeare says it would require two soldiers to each pilgrim to preserve order and cleanliness and induce observance of the ordinary decency or precautions against the spread of all sorts of diseases that are fostered by filth. When Mecca is the starting point the disease takes the southern Mediterranean route through Italy and Spain. Here, again, ignorance, superstition and filth give it fresh impetus. Physicians are accused of being responsible for the plague and are slain, the shrines that Garibaldi closed up are opened again, and the dirty wretches crowd about their wooden and stone images imploring relief from them.

²⁰ Prutz *Kulturgeschichte der Kreuzzüge*.

When India is the starting point the famine-stricken, abjectly ignorant and religious peasantry of Russia afford fertilization enough to kill three thousand daily. Physicians are also murdered in that country.

As Balzac says²¹: "If any good is to be done we come into collision not merely with vested interests but with something far more dangerous to meddle with, religious ideas crystallized into superstitions, the most permanent form taken by human thought."

Votaries of a religion of blood are not all cruel, for even in Thibet there are lamas who dislike the spirit dances, cruelty and deceit, and are made to suffer for their humanity by other lamas.

Similarly many excellent monks and priests have tried to stem the torrent of most pernicious systems. The very best men in any organization will often be among the lowest in rank, and where intrigue, politics, wire-pulling, conspiracy exist the very worst are often at the top. Savonarola, in the fifteenth century, fought for purity of his church, and so did Luther in the sixteenth, both against corruption in high places which trod upon the sincere, devout and lowly in the ranks of the monks and priests.

Many an enthusiastic missionary has been sent to the cannibals, and the reveling, feasting superiors at home point to his history as evidence of how good the order is. But there are good and bad everywhere and in every organization, but so long as men seek office the selfish schemer will usually be highest in both church and state.

Christ, Confucius, Savonarola, Buddha, Luther were all reformers, and suffered in consequence, and the history of religions is full of the failure of attacks of reformers upon vested interests.

The basic motives for certain measures or opposition thereto are often amusingly revealed in queer combinations, such as the conjoint, clerical and saloonkeepers' movement to close the world's fair on Sunday in Chicago; the liquor dealers outside wanted to draw custom to themselves by closing the fair.

²¹ Le Medecin de Campagne.

The efforts of Dr. Holt of New Orleans in fighting yellow fever were made unnecessarily troublesome by many selfish interests opposed to work wholly for the public good. He found powerful political, clerical and mercantile enemies, intent upon some comparatively trifling gain, arrayed against him, and occasionally a press subsidized in the interests of ignorant and, in this instance, murderous greed.

Chicago luminaries representing the "Department of Religion" at the World's Fair summoned a congress of teachers and members of all faiths to indicate how deep were the foundations of theism and faith in immortality, blandly and densely unaware that many highly developed religions have neither belief in deity or immortality.

There is no evidence that man was aboriginally endowed with a belief in a god, and races exist without an idea of deity. Missionaries among the Northwest tribes of American Indians had to invent an expression for the soul by stating it was an "intestine that never rotted"; the old word *sacrum* had the same significance among the ancient Romans as a bone that never perished.

Fuegians thought that if food were wasted storms, wind and rain came as a punishment. As Lubbock remarked, "a horrible dread of unknown evil hangs over savage life and embitters every pleasure," and it is the unseen terror that appalls the most, the unknown, that is dreaded more than anything known.

In keeping with the lowest races being the most superstitious, David Hume asks: "What age or period of life is most addicted to superstition? The weakest and most timid. What sex? The same answer may be given. The leaders and examples of every kind of superstition, says Strabo, are the women."

In the Cathedral of St. Peter at Rome is the spear of St. Longinus, which is said to have been found in Jerusalem by the Empress of Germany, Helena, the mother of Constantine. In 1492 the Sultan of Bejazet sent the lance to the pope from Constantinople. But there is a rival lance at Vienna, and each has its adherents that it was the one that pierced the side of Christ. The cardinals remain neutral. There are also two skulls of St. John

on exhibition at rival churches in Rome, both of which are officially declared to be authentic by a special miracle.

The Basilica was replaced by St. Peter's church and all the best marbles of ancient temples were used in building the new temple. Even the statue of that saint, with its great toe kissed away, is a copy of the Capitoline Jupiter cast from bronzes of the pagan gods. So the rehabilitation of Rome physically is paralleled by its spiritual resurrection. "The ghost of pagan Rome sits on its own grave."

Probably one of the most fantastic superstitions on record was caused by the crusaders bringing back milk in bottles which they sold as the milk of the Virgin Mary, and a piece of the finger of the holy ghost.²²

Comical instances of inconsistency come down to us from not only historical but archaeological periods, such as when John, 1204, turned his back on the mass and scoffed at the priests, but never started on a journey without hanging relics around his neck.²³ Dr. Clay, the Babylonian archæologist, showed me an inscription which he interpreted to mean that "this valuable piece of lapis lazuli is presented to the god Baal by a devout worshipper," and the offering is a worthless piece of glass palmed off upon the deity; this was from the Nippur collection, dating back beyond the days of Abraham.

The Delphian oracles were as glib in explaining away their failures of prophecy as a modern clairvoyant. "Cræsus, after his defeat and captivity, sent messengers to reproach the Delphian oracle with misleading to ruin by false predictions one who had merited the favor of the gods by the magnificence of his offerings. He gave so much the oracles thought they must make him happy with good luck promises. They replied that his fifth ancestor had sinned, and Cræsus had to expiate his crime."²⁴

Advance and ambition led Cræsus against the Parthians, but superstitious terrors hampered him. A Roman tribune devoted him to the infernal gods with solemn nonsense. Prodigies were seen in his crossing the Euphrates and treachery took advantage

²² Draper, *Conflict of Religion and Science*, p. 276.

²³ Green, *History of England*, p. 152.

²⁴ Herodotus, I, 91.

of his fears to turn him against his friends and lead him to his enemies. The Parthians fell upon his army with frightful noises, knowing that the heart can be appalled by din.

Xenophen said that "the Lacedemonians always during a war put up their petitions early in the morning in order to be beforehand with their enemies, and by being the first solicitors pre-engage the gods in their favor. Early mass may be for similar reasons.

Another survey of superstitious fear may be stated as at first indefinite, unorganized and scarcely classifiable, merely a lot of childish fears and notions generally. Then a few persons discern a chance to make a profit out of these fears and organize the mythologies, and in the course of time a few reformers seek to cut off some absurdities, but the sorcerers fear loss of their power and object to any changes of the kind. Finally some changes occur by outside pressure to which the priesthood is compelled to adjust itself, and a stronger system may appear from the outside and the old and new beliefs commingle. After a while men grow to higher notions, and some of these become incorporated with the idea of gods. Things of any note, good or bad, are apt to be credited to the gods. The highest ideas finally become severed from rewards and punishments, and exist by themselves without fear or favor, and separate themselves from creeds or beliefs. Notwithstanding the superstitions and often evil nature of early religions the ethical, particularly among Christians, that has developed upon this unpromising groundwork, is among well-disposed civilized persons a feeling of religious devotion that is highly complex, and consists of love, submission to a mysterious superior, dependence, fear, reverence, gratitude, hope and other elements. The deep love of the dog for its master has been compared to it.

Babism²⁵ arose as a protest against corruption in the Moham-medan church. Believers in it were those who thought it was the fulfilling of the Koran, those who saw in it hope of national reform, mystics, and those to whom the teaching appeals in a general way, and finally in America those who believe Babism as a fulfillment of Christianity. A million converts exists, three

²⁵ E. D. Ross, Prof. Persian, Cal. Univ., N. A. Review, April, 1901.

thousand of whom are in America, and a third of these in Chicago.

Mormonism flourished since its originating period, which extended from 1805 to 1830, when Joseph Smith fabricated some silly revelations which he engraved on metal plates and buried, and later dug up and interpreted by means of a holy piece of transparent stone. The inscriptions are just such trashy marks as a plough boy ignorant of anthropology in any form could originate. A community was started in Nauvoo, Illinois, which was driven out and took refuge in Salt Lake City, Utah, where polygamy became a leading feature of the cult. These barbarous settlers at Mountain Meadow in 1857 massacred a company of emigrants who were passing through their country, and in other ways their violations of law and affronts to decency led to their final overthrow, at least as to sacerdotal strength. It is told of Brigham Young, their late leader, that he contrived his apparent death with the intention of resurrecting himself, to make a strong impression upon the Mormons, but his rivals managed that he should not be resurrected.

The great religious controversy of the 4th century over the mystery of the trinity was settled by the triumph of the doctrine of Athanasius over Aurius; then arose a still more bitter dispute over the mystery of the incarnation. Bloody tumults, murders and fierce revolutionary conspiracies followed for sixty years over the question whether there was one nature or two natures in Christ.

Monarchs alone often gave impetus to the most cruel instincts. From 1555 to 1559 occurred the opening of the dark and bloody reign of Philip II of Spain. Malignity, perfidy, evil and plotting industry with slavish superstition marked this period.

The original society of Assassins was an order like the Templars, a branch of the Egyptian Ishmaelites, with the motto "Believe nothing and dare everything." They would kill a sultan or commit suicide. Of an opposite character were the mystics of the 17th century with their theory of abstract contemplation to find out God. Quietism it has been called. It was enough to induce imbecility, but a similar introspective fit resulted in

Ignatius de Loyala founding an order "for the greater glory of God" that filled the earth with trickery, woe and blood.

Through the fragmentary sayings of Mohammed runs the idea of the unity of God, his sovereignty, his terrible might and yet his compassion. Merely a man's conception of deity, as that of a big man, strong, angry, malicious and sometimes forgiving. The Islam religion admits five prophets before Mohammed, each greater than the previous ones: Adam, Noah, Abraham, Moses and Jesus. Mahdi is to be the highest. Those claiming to be the Mahdi are beyond number among the Persians, Turks, Egyptians and Arabs of the Soudan.²⁶

The Flagellants of the 14th century thought they could please God by scourging themselves, because they distrusted the church and priests as means of intercession. The order spread rapidly over Europe till the pope finally suppressed it.

It is an important matter to decide why there is such a thing as religious hatred and prejudice? Why the odium theologicum? Is it a part of the offence when others merely differ with you on any topic? Some cannot stand contradiction of any kind. But it must be deeper rooted, for religious intolerance is deep and fades only as all religion is given up, and even then the atheist can be intolerant and hate the religious and see no good in them.

Prescott, in his history of Cortez, speaking of the horrible Aztec human sacrifices and the equally cruel Spanish conquests, says "strange that the most fiendish passions of the human heart have been those kindled in the name of religion." "God-fearing armies are the best armies," says Carlyle, and Bagehot notes that "high concentration of feeling makes men dare everything and do everything."

The poor crazy lass Joan of Arc, with her ideas of having direct commands from heaven, managed to fire the confidence and courage of the French, who for a hundred years had been scurrying away from English invaders. Religious conviction made the French formidable, which they had not been previously. Cromwell recognized the value of bigotry in war and effectively used it.

²⁶ The Mahdi, Past and Present, Ch. I, p. 2, J. Darmsteter.

Patricius Christianized Ireland long before there was a pope, so the Irish did not recognize his right to "Peter's pence," a penny tax on every house, but Henry II of England, to appease the pope for Becket's murder, offered to coerce Ireland to popery, and Dermond Macmurragh, a king of Ireland, betrayed his country to the English. Such matters are usually unmentioned in the average histories, even though Macauley, Pepys, Dickens, or other fact-seekers record them. You do not encounter such observations often as that "Friar Tetzal, with a bad character, sold indulgences to beautify St. Peter's at Rome, and Henry VIII abused Luther for daring to find fault with Tetzal, and hired Sir Thomas Moore, whom he afterwards beheaded, to write a book at which the pope was so well pleased he gave Henry VIII the title "Defender of the Faith," and the same king abandoned pope, church and former faith and became intemperate in matters of wives.

Charles Dickens,²⁷ in simple language describes the great religious commotion when thousands of all ranks and conditions left for Jerusalem on the first crusade. "All were not zealous Christians. Vast numbers were restless, idle, profligate and adventurers; some went for love of change or in hope of plunder, some because they had nothing to do at home, some because the priests told them to go, some to see foreign countries, others to knock men about and would as soon knock a Turk about as a Christian." Sir J. Stephen²⁸ dwells on the great "brutality and destructiveness of the crusaders," as have other historians, but the popular notion is slow to expire that these invasions were wise and divinely directed. They were really the means of working off surplus energy directed by bigotry and ignorance, and the blood letting that resulted quieted Europe somewhat, but not till several failures had been made in the same line.

The castes of India are based upon "purity of blood." An infinite number of castes are grouped under four kinds, the priests or Brahmans, the soldiers, the merchants and the servile class. They love to think that their universal classification of different castes, as the mouth, arms, thighs and feet of Brahma

²⁷ Child's History of England, p. 57.

²⁸ Lectures on History of France.

is a divine arrangement. They are exclusive and will not eat or marry out of their castes. Of course the Brahmans increased, as they were to be supported by charity. There are fourteen million of them, about one to each Hindoo god.

These very old religions may survive among degenerate people, both people and religions being anachronisms, while in some cases both may die out, as did the Egyptian, which kept the dead as mummies with a roll or book of the dead to help the deceased through hades. In South America many whites have sunk to fetichism, which is a combination of ancient savage observance mixed with Christianity, and passing under the latter title.

The religion of a race is merely culture and instruction, whether low or high grade. In Thomas à Becket's day it was thought to be the height of religious culture to be very dirty and to have vermin.

The origin of sects is quite instructive and reveals the simple basis upon which they rest. The theosophists started through a joke played on a superstitious gentleman by some college professors. They led him to think some Hindoo revelations were sent to him. The methodists started in a college nick-name of a small society of students at Oxford in 1729. John Wesley was the master spirit of the society. Mohammed and Swedenborg were epileptics, though having considerable force of character, but dominated by delusions and hallucinations, as so many other religious innovators were. John of Leyden, the founder of anabaptism, was insane homicidally. John Calvin was bloodthirsty and cruel in his beliefs and practice, though in keeping with his period. The puritans burned witches at the stake in New England, though professing Christ's teaching of love and forgiveness. Manzoni²⁹ tells of persons in many epidemics, 1530 to 1630, in Lombardy being burned as witches and blamed as spreaders of the plague. Even "learned men" claimed that the comet of 1628 caused the Milan Epidemic of 1630.

Human sacrifices were very common as an outgrowth of animal and plant offerings, from a feeling that the gods should have the highest class of gift, and it is surprising how universal this

²⁹ I Promessi Sposi, p. 483.

practice was. The Druids drenched England and Europe with their altar blood. Burdick (Foundation Rites) describes the custom of burying alive in corner-stones. Asia and Africa in various ways destroyed human beings to appease deities, while the Mexican and South American Indians probably exceeded all others in this infamy. Other religions kept up the sacrifice but in disguised ways. The horrible Spanish and Portuguese inquisitions were substitutes, the Crusade and other "holy wars," whether by Mohammedans or Christians, offered up human life freely. Directly or indirectly these superstitious cults are deadly. An Amish preacher in Pennsylvania forbid the petting of a child by a father as sinful, claiming that all love should be reserved for God. The family quarrel that followed resulted in the father killing his entire family; as degenerates crowd such cults it is remarkable that more such things do not happen. Probably they are not heard from usually. The Quakers and Shakers were probably the most harmless of all sects and in spite of it they appear to be dying out. Eddyism manages to be murderous in withholding aid to sufferers who die unattended properly. The tendency of this depravity is to harden the heart and kill off all sympathy. Dowieism is a mere confidence game of a colossal criminal degenerate who robs his congregation in the most open manner and also permits the sick to perish unaided. He is worshipped as Elijah II, and it is expected that he will promote himself further when practicable. A paranoiac named Teed taught that the earth was hollow and we lived inside of it. He built up quite a harem which he called heaven. He and a man named Schweinfurth induced many to give up their money and families to them in return for the privilege of worshipping them.

Predictions that the end of the world was coming have constantly been made, the most notable being in A. D. 1,000, but even as late as 1840 the Millerites in America prepared their ascension robes and sold off their property, giving the money to preachers of the doctrine to be distributed among the poor, but the preachers were thrifty and argued that the poor would not need it if the world ended.

Bitter quarrels and bloodshed have occurred over such questions as to how many souls can dance on the point of a needle.

The iconoclastic controversy of the eighth century began with the Greek Emperor Phillipicus Bardanus suppressing image and picture worship. Constantine the Roman pontiff denounced him. Leo, another emperor, in 726 commanded all images except that of Christ on the cross to be taken from the church. The priests and monks who made money by the sales of images raised a rebellion. Charlemagne assembled three hundred bishops in 794 and they condemned image worship, but vested interests in the superstition still prevail.

In 1420 the Hussite wars of Bohemia were due to the papal refusal to agree to the following articles:

1. The word of God to be freely preached.
2. The sacrament to be administered in both forms.
3. The clergy to possess no property or temporal power.
4. All sins to be punished by the proper authorities.

Huss denounced indulgences and was in turn excommunicated, tried by a clerical mob, condemned and burned at the stake in 1415. The chalice branch of the Hussites demanded wine for the laity at the sacrament. In this Hussite war one hundred towns and fifteen villages were destroyed. Finally the Hussites conquered and were invited to a conference with the papists, but could not agree. In 1648 there were but 700,000 left of four million in Bohemia after the war.

In ancient Babylonia, forty centuries B. C., the offices of priest and king were united in the "patesis." Sargon, who reigned in 3800 B. C., was among these priest-kings, and not only did this governing class profit by the unintelligence of the masses but oriental commercial enterprise guarded itself with lies, as in Phoenicia, to discourage competition and conceal the origin of articles. The trees from which they obtained the frankincense in Arabia were reported to be guarded by winged serpents;³⁰ the lake where cassia was gathered was infested by winged bats,³¹ and cinnamon was in high, inaccessible rocks. Mercantile explorers concealed their geographical discoveries as zealously as priests who desire to perpetuate ignorance, for more can be made from

³⁰ Herodotus 3, 107.

³¹ I Kings, 3, 110.

it, as to this day public schools are fought as destroyers of profits to the cruel and oppressive.

The tooth of some gigantic extinct animal is exhibited by Ceylon priests periodically as a sacred relic of Buddha, as the coat of Christ is shown in Treves.

Sir Edwin Arnold remarked that "The extravagances which disfigure the record and practices of Buddhism are to be referred to that inevitable degradation which priesthoods always inflict upon great ideas committed to their charge."

The sacred city of Lhasa in Thibet is forbidden to foreigners by the Buddhists and indeed the entire country is hostile to them. In this city is the great temple of Potala of the Dalai, or Grand Lama, who is regarded as the reincarnation of Buddha the god. He is really a boy, and always dies young under the guardianship of the dreaded Gyalpo, the temporal ruler of Lhasa. The palace is built on a great rock, and the poor Grand Lama is concealed at the top of the ninth story, which is the summit, and never allowed out. This sort of figure-head worship is worth study as founded upon a very widely distributed human disposition to reverence the mysterious, the unknown, the talked about but unseen. When people are monkeys enough to let a set of sharpers hide their ruler and really reign in his stead they will gulp all sorts of yarns about his wonderful powers, nor do the priesthood care to have more than indirect power, for as the mouthpiece of the god they can exert more power than were they to claim to be divine direct. The Japanese mikado was thus held as too holy to be seen, and a rascally subordinate fooled the people and ruled instead till the overthrow of the usurper, and in the Philippines the insurgent generals tried this trick by killing each other off and giving out that the dead chief was too exalted to be seen, but that his orders were being carried out. While mankind is content to let a special class of confidence men set themselves up as interpreters of a hidden ruler, either in the top of a building or in the sky, mankind will receive precisely the consequences of such simplicity.

As an evidence of the kind of morality that may become attached to a religion, in Thibet no man may have more than one wife, but women may have as many husbands as they want at one time. The Buddhists pray by machinery, a wheel turned by

hand or water power. The priests invent hideous dances and disguises such as skeleton pictures on their clothing to frighten the childish common people. Primitive Buddhism is antagonized by the Lama worship, just as primitive Christianity is ignored by the Romish and Russian churches. Like the pope of Rome and his progenitor, the old Roman emperor, so in Thibet the Grand Lama was, through his visible representatives, the priests, supposed to have power and learning as wide as the ocean. and he is sometimes called the "Ocean Lama."

Zoroaster was said to have been a king of Media who conquered Babylon about B. C. 2458. Another account makes him the herald of a new religion which regards the universe as contended for by two principles, one of good and one of evil, but of course in time corruptions of this belief crept in. Wherever Apollo worship was fixed there were prophets and sybils. The priests studied geography and physical sciences to enable them to appear to know other things that they did not, and to impose upon credulity. The Delphian oracle nonsense was as transparent a robbery of superstitious people as that of Dowieism. The town of Krissa, in Phocis, near Delphi, became great and powerful. The Krissæans derived great profit from the numbers of visitors. The sanctuary of Pytho with its administrators expanded into the town of Delphi. The Krissæans abused their position as masters of the avenue to the temple by sea, and levied exorbitant tolls on the visitors who landed there. They outraged women returning from the temple. About 595 B. C. a war was thus caused lasting ten years, called the first sacred war in Greece. Krissa was destroyed and the Delphians' right to rob the visitors without competition triumphed.

The Egyptian priesthood was a sacerdotal nobility that was exempt from taxes, military service and forced labor. Priestly inscriptions declare imprecations threatening with terrible ills in this world and the next those who stole the smallest part of the gifts to the gods. The priestly possessions gradually increased until even in the most distressed times at least one-third of all lands and other property belonged to the gods, but kings were forced to wrench power and lands from them.³² The kings were

³² Maspero, *Dawn of Civilization*, p. 303.

quite as oppressive, particularly when they would commandeer the entire nation to carve out and pull huge blocks of stone up artificial hills to build pyramid tombs for themselves in which their carcasses were to be saved for the next world. Then in the building of such vast temples as the one at Karnak the priests would have their innings with the poor creatures, hundreds of thousands of whom worked and starved to death to enable the ruling ecclesiasts to have fine buildings to live and serve in, to further deceive and rob generations unborn. In the famous papyrus at Turin there are caricatures of the licentious practices of the priests, depicting a series of adventures of an old and amorous priest with one of the singers of the temples of Ammon.

The Koran is an irregular collection of scraps written on palm leaves and mutton bones. The original "inspirations" being discordant they were "expurgated and revised" by the third caliph, Othman. The epileptic Mohammed would have a revelation requiring him to take another wife or to write some instructions for his people to follow and would use any writing material handy, such as the shoulder bones of sheep, palm leaves, etc.; Abu-Bekr picked these over and put the long ones first and the short ones last, the only arrangement of these revelations except that of the third caliph's additions and omissions. These baskets of fragments are worshipped.

The moslems assemble and select an imam, who leads the capers. He rises and the moslems rise, he prostrates himself and they imitate him. While the "revelations" of the Turks and Mormons were mere tricks to enable the practice of polygamy, at least this is an open practice, other privileged livers in temples secured harems by imposing upon the rabble such claims as making "brides of heaven." This appears to have been a common trick in ancient Egyptian, Grecian and Roman days and it is reasonable to expect considerable survival of such customs. In many places in South America and Mexico open debauchery of the priesthood is common and not even apologized for. Sam T. Jack, a showman, said that a Mexican priest offered him girls for his ballet, and commanded them to strip so he could judge of their figures. This was in 1895.

Some sects have made use of interpretations of texts as justi-

fication for any sort of excess or wrong they desire to commit, especially "the sanctified" who say they cannot sin. "All things are lawful for me"³³ is one of these texts.

The religion of the Druids among the Celts of Gaul and Britain was cruel and included human sacrifice. Dru means oak grove in Gaulish. The oak and mistletoe were sacred growths among them. The priests pretended to be enchanters and each priest wore about his neck what the ignorant were told were serpents' eggs in a golden case. The religion was a mixture of the worship of serpents, sun, moon and gods and goddesses.

Coifi, a chief priest of the Britains, denounced his gods as imposters because they had not made his fortune and he became a Christian. This was a rough way of announcing that a "higher" call had been received similar to an increase in salary offered by another congregation.

The priests in the early English days following Alfred, especially in Edwy's time, resorted to mechanical tricks to deceive the peasants and keep knowledge from the common people, as did the Egyptians, Romans and Greeks. Belief in sorcery was also common. It is told of William the Conqueror that he placed a sorceress in a wooden tower and had her pushed before his troops, but Hereward burned tower, sorceress and all.

The pontifices (bridge priests) of ancient Rome had flamines or sacrificial priests to blow the fire. The flamen was not allowed to take an oath, mount a horse or look at an enemy. He could not stay a night away from his house and his hand touched nothing unclean and never approached a corpse, somewhat as the Hebrew Kohen was exempt in some respects. This fire-blowing priest who had to be clean doubtless originated from priestly cooks who finally grew so important that a lictor preceded him to stop work of people, as he was not to see the business of daily life.³⁴ So powerful an order as a pagan priesthood, it appears, was as dependent upon culinary caprice as any suburban resident.

In the days of Henry VIII teeth and toenail relics were abundantly on exhibition by indolent, sensual monks. They had the coals that fried St. Lawrence and they moved images by wires.

³³ I Cor. VI., 12-15.

³⁴ Gaul and Kromer, *Life of Greeks and Romans*, p. 103.

But when the people turned against these harpies of course many good monks had to suffer with the bad. In 1366 "Chaucer sings of the hunting monk and the courtly prioress with *amor omnia vincit* on her brooch, while others tell of the unrebuked vices of the time when the king paraded his mistress through London as queen of beauty and nobles blazoned their infamy in court and tournament."³⁵

Just before Wyclif the pope and king combined for the enslaving of the church, bishoprics, abbacies and livings in the gift of the churchmen, so that the treasuries of both king and pope profited by the arrangement.³⁶ This was in 1361. In 1377 Wyclif's theory, seeking to make a direct relation between man, and god, swept away the whole basis of a middle class priesthood on which the mediæval church was built. The priests resented a suggestion that they should return to original poverty.³⁷

Rufus of England made "Firebrand," Flambard, a dissolute and vicious rascal, bishop of Durham. Dunstan previously, after an infamous career of humbuggery, rapacity and cruelty, was canonized. The churches were often the sanctuaries of all sorts of refugees, sometimes unexpectedly violated, as by the knights who murdered Thomas à Becket, and the black band of Henry III in their capture of Hubert de Burgh.

A mediæval ecclesiastical prerogative was what was called benefit of clergy which conferred on its members immunity from the operation of secular law. This has often been confounded with services of clergy, which is an entirely different thing. Benefit of clergy means that the priest might murder, steal, rape, lie, without punishment. Such things as the interdict and excommunication derived power wholly from ignorance and superstition of the populace. A cursed person dropping dead in church from fright was an occasional proof of divine power of the curser, about as frequently it has happened when a person was blessed at a church sacrament, but of course this was a mere accident. England was made to suffer from both excommunication and interdict when the country was altogether damned for not yielding

³⁵ Green, History of England, p. 298.

³⁶ Green, *ibid.*

³⁷ Green, *ibid.*

revenues to the curser, but it escaped the inquisition, which lasted from 1203 to 1225, in which period Torquemada alone sacrificed 11,000 victims. The total in 43 years, from 1481 to 1525, amounted to 234,520.³⁸

Selfish grabbing of opportunity afforded by spread of sectarian ideas is by no means confined to any particular religion. Francis of Waldeck in 1544 wanted to make the new religion of Lutheranism a family possession with himself as bishop, but mob frenzy moved too fast for him. In Münster churches and libraries were destroyed, foolish revelations were made, prophets appeared with long, ragged beards. John Bockelson married sixteen wives and proclaimed polygamy.

Tyler summarizes nature myths in his chapter on the early history of mankind³⁹ to the effect that everything in nature is personified, fire is a hungry beast licking its red tongue over its food, the sun and moon are personified and the moon's children are the stars; animals are persons; much superstition is from the childish effort to explain nature, stories grow and change. Cox names as aids to change polynomy the use of many names for the same hero, equivocations, also, where words with the same sounds become confused and different meanings are attached to old ideas, for instance the rays from the sun were spoken of as fingers in a poetical way in one language, to be taken literally in another language as meaning that the sun had real hands and fingers. Then localizing tendencies fitted old stories to new places, etc.

Müller mentions poetical metaphors such as moonlight clasping the earth and sunbeams kissing the seas as common in the early history of languages. In reference to the golden rays of the sun playing with the foliage of the trees the Veda mentions Savitur, one of the names of the sun, as golden handed, and the mistake arises that the sun is full of gold for its worshippers, and bestows it on his priests and thus superstitions take root from childish ideas. Change in the mythology in the original Sanskrit occurs as to Savila cutting his hand and the priests replaced it with an artificial one of gold. Later Savitar is said to become

³⁸ J. A. Symonds, *Renaissance in Italy*.

³⁹ *Primitive Culture*.

himself a priest and he cut off his own hand and the other priests made a golden one for him.⁴⁰

The German god Tyr is identified by Grimm with the Sanskrit sun god,⁴¹ and he is one-handed because the name of golden-handed sun led to the conception of the sun with one artificial hand and later to the idea of sun with one hand. Each nation invented its story as to how Savitar or Tyr lost his hand, and while the priests of India said he lost it at a sacrifice, the sportsmen of the north said he placed it in the mouth of a wolf and it was bitten off. Radical and poetical metaphors get mixed.

If modern poets call clouds mountains it is clearly poetical metaphor, but we see the Veda called the clouds parvata, knotty or rugged, and the result is mythology, for if in the Veda it is said the maruts or storms make the mountains tremble or that the storms pass through the mountains, this, though originally meaning that the storms make the clouds shake, comes to mean later that the maruts actually shook the mountains and rent them asunder.⁴²

Müller further says, "I look upon the sunrise and sunset, on the daily return of night and day, on the battle between light and darkness, on the whole solar drama in all its details that is acted every day, every month and year in heaven and in earth as the principal objects in early mythology. I consider that the very idea of divine power sprang from the wonderment with which the forefathers of the Aryan family stared at the bright, deva, powers that came and went no one knew whence or whither, that never failed, never faded, never died, and were called immortal, i. e., unfading as compared with the feeble and decaying race of man. I consider the regular recurrence of phenomena an almost indispensable condition of their being raised through the charms of mythological phraseology to the ranks of immortals, and I give a proportionately small space to meteorological phenomena such as cloud, thunder and lightning, which, though causing commotion for the time in the hearts of men, would be classed as subjects or enemies. It is the sky that gathers the clouds, and the bright

⁴⁰ Müller Science of Languages, V. II., p. 397.

⁴¹ Deutsche Mythologie, XLVII., p. 187.

⁴² Müller, Sci. L., Vol. II., p. 396.

sun is but an irregular repetition of that more momentous struggle which takes place every day between the darkness of the night and the refreshing light of morning."⁴³

Mohammedans do not fear death in battle, for they believe their reward is sure in the next world, but if their bodies are cut to pieces or burned they can never get to heaven, so some of their enemies terrify them by cremating dead Mohammedans. In Bosnia at one time they fled from the country on this account. Ancient Assyrians took advantage of the Egyptians' reverence for cats by tying them to the shields of soldiers before whom the Egyptians stampeded, as they could not risk killing a cat. The Sepoys of India cared little for any punishment the English could inflict, and were in constant danger of another uprising until some captives were blown from the mouths of cannons, a mode of destruction that was found to completely suppress further revolt, owing to the Sepoys having some superstition attached to separation of parts of the body.

Survival of time-honored foolishness is beyond number. People may be seen slyly gathering the bubbles on their coffee, picking up horseshoes for luck, trying to see the new moon over right shoulders, hesitating about walking under ladders or crossing a funeral procession. Among gamblers there is a regular code of such observances and an allied mysticism is found to an extreme degree in various forms among degenerates of the "cerebral neurasthenia" class who fear to do this or that thing, to go here or there; some fear crowds, others open spaces, some fear contamination and others have morbid impulses to count everything they encounter or to make ejaculations sometimes of a filthy nature.

Most superstition is ingrained from childhood, such as in a baby girl who was always afraid of a chicken feather, its trembling movements caused it to appear to be alive, and a primitive savage could have readily made the same mistake.

Lowry, in Griffin's Collegians, turned back on meeting a red headed woman and lost his place because he did not perform his errand, delivering mail, but Lowry claimed it was the red head that brought him the bad luck of losing his job.

⁴³ Müller, Sci. L., Vol. II., p. 537.

Much charity can be traced to a superstitious regard for a reward hereafter. A soldier at Santiago was assisting refugees and Col. Roosevelt warned him not to expose himself to so much danger, whereupon the soldier remarked with much surprise: "A man can't get hurt while doing a good deed, can he?"

The auspiciousness of things we find still referred to, originating in the ancient custom of the priests observing the flight of birds or the intestines of animals to determine whether the gods favored certain undertakings. The Emperor Hadrian was especially addicted to "auspices." The vulgar expression is trying to note "which way the cat jumps," and children, savages, gamblers and degenerates attach importance to trifling methods of solving uncertainties, as the Chinese religion brings down from far off times similar ideas, and the Chinaman juggles with his "joss sticks" for answers as to whether he shall make a certain venture or not.

Benvenuto Cellini gravely records that January 5, 1537, just after sundown near Rome, he saw in the direction of Florence, toward the northwest, on the approach of a dark night, a beam of light which sparkled. He thought it indicated something and it turned out that a noted man had died that day. The aurora borealis is not common in such latitudes, but this extract from the famous sculptor's memoirs is characteristic of the universal misinterpretation of the simplest natural events.

Lucretius' affirmation that "Nature is seen to do all things spontaneously of herself without the meddling of the gods" is opposed to-day by those who have substituted other gods for the ancient. Superstitions are often imperfect observations, as when farmers and sailors predict weather upon insufficient signs, such as the ground-hog appearance, etc. Astrology swayed the destinies of Europe, and a hundred years after Luther, the astrologer was the counsellor of princes and generals. Now the very rudiments of astrology are lost and forgotten except among fortune tellers and other fakirs. The average psychical research society is composed of persons with little logical training and unfamiliar with physics, chemistry and biology, but occasionally one who may be versed in one of these subjects exhibits all the credulity and bias of the others. The average fraud who is being

examined by such societies presents his fake in such ways as could be compared with requiring the watch repairer to study the deranged mechanism of a watch by examining the works through a key hole, the cabinets and darkened room and other bamboozling tricks are gravely investigated and finally some medium makes the revelation that there is nothing mysterious about it all except in the minds of the victims. Mrs. Piper of Boston, in October, 1901, announced that her mysterious trance states in which so many "distinguished persons" found evidences of supernaturalism, etc., are nothing extraordinary, and that she does not claim to hold communication with the so-called spirit world. She explains that her revelations were nothing more than what could have naturally occurred to her mind or been suggested by some one present. In her simplicity she talks about mind reading, or telepathy, and likens it to the X-ray and wireless telegraphy, much as the Indian shows you your soul in the looking glass, and claims that all things are possible when water boils without heat, as shown by the Seidlitz powder. As Huxley says, "Jack and the Bean Stalk" can be proven true by such reasoning as these "investigators" use. Keeley's motor, the great humbug, was firmly believed in by stockholders in it, and by occasional scientists. Ghosts, spirits, fairies, pixies, the "little people" and the "good people" of Ireland and many other countries are survivals from hoary old times with a basis of forest-dwelling monkeys and dwarfs or pigmies mingled with hallucinations, delusions and deception. Crystal gazing, palmistry, astrology, hypnotism, animal magnetism, and other occultism is "proved" by calling attention to the fact that competent surgeons doubted the possibility of the X-ray when it was first announced. Such an argument would bolster up the wildest drivel of pre-Aryan ape imaginations as true. There are competent persons to-day who do not believe the moon is made of green cheese, therefore this occult fact will become established according to occult reasoning because it was not believed in. This alleged ability to read minds at a distance, telepathy, Preyer regards as involving fraud, coincidence, hallucinations, incorrect reporting, lack of accurate observation and similar means of imposing upon self or others. As to the crystal

gazing of Lang, many lunatics in asylums "see things" without the aid of a crystal.

Many peculiar events can be accounted for naturally, for example a lady lost a promissory note for which she hunted in vain until finally its location came to her in a dream; this is nothing more than a revived memory equivalent to things occurring to the mind when ceased to be sought for. A drunkard hid his money and while sober could not find it but readily went to the hiding place when drunk again.

A lady was being confirmed in a church when an earthquake occurred; she told a physician who was also in church that she thought the noise was the coming of the holy ghost, the doctor remarked that he thought it was the coming of the steeple; instances of the receptivity of ideas from untrained and trained directions. Many are the paranoiacs and demented in asylums who not only claim to be gods but impose their belief upon the patients.

A poem addressed to a scientist by a literary gentleman deplored the inability of the delver in nature to see God in all such matters. Pope's lines, "Lo, the poor Indian," etc., were appended to the verses by the naturalist, by way of reply.

The English high church covets the millinery, perfumery and gymnastics of its older relation. At Dover in 1901, Easter, a curate refused to confirm boys who refused to confess, and this suggests that ceremonies enable a hold on the imagination and purses of the people. By increase of concessions such as sacraments, abstinences, feast and fast days, oversight, control and reverence are increased together, whereby the pennies of the multitude go to make the wealth of a few.

The ancient patesis or king-priest has an imitator in Kaiser Wilhelm II, who sermonizes and poses in other ways. Illinois had a demagogue spoils system governor who often occupied pulpits on Sundays while filling responsible public charity positions with incompetent officials whose ignorance was murderous.

Wilhelm addressed the nobles of East Prussia September 6, 1894, claiming "divine right" to kingship, and at Hamburg in 1899 and elsewhere he repeated this claim. Prince Henry in 1897 gave vent to this outburst when addressing his royal brother:

"I am only animated by one desire, to proclaim and preach abroad to all who will hear, as well as those who will not, the gospel of your Majesty's anointed person. * * * Our most serene, mighty, beloved Emperor, King and master, forever and ever. Hurrah, Hurrah, Hurrah. Huxley thinks that eventually royalty will be laughed out of existence. Seemingly the time has not yet come.

Eddyism advocates that its prayers have a "knack" and the correct combination with the door to the deity is in exclusive possession of the Eddyites, that he will only listen to and grant the prayers coming from that official source, when paid for at regular rates; your individual prayers cannot avail, you must belong to the "Union," and "rat" praying is discouraged by the trust. The official prayer alone is effective. Similarly a Missouri confessed fakir named Weltman advertised to cure every one at a dollar a prayer, and so did a miscreant who called himself "Dr. Truth" in Boston. The postoffice authorities seized their mail for carrying on confidence games with the public and the amounts of money sent these transparent humbugs was incredible.

Mental impressions do benefit some sick people, but because we may find an occasional apple in the gutter that is not the proper place to seek for apples, however much the public may appear to think so. I have known extreme unction to greatly help, and, on rare occasions to restore apparently dying persons, at least their worry both as to bodily and spiritual matters was allayed by this last sacrament, and as surely as worry may kill, so their release from it helped to their recovery.

Among the countless new sects that arise are such sinless affairs as the new "holiness." A Methodist solicitor of building funds established a church of this nature, and the sanctified are notoriously the most arrogant and cruel hypocrites. Their sins are not sins. Royalty similarly cannot sin, and priests also are sinless.

An abominable old superstition may outlive its profitableness to its cultivators, but the people may go on perpetuating it though its occasion has passed away, just as we have remnants of druidical festivals and customs retained among us and ancient Babylonian and Jewish ceremonies and priestly apparel, with also some of the Mithras of the Persians and Apollo sun worship, remain

with us. The very name Sunday for the holy day is an instance. Nations cling to old customs even when their religion is changed, but it is only when a band of persons intelligent and powerful enough see profit in some radical change that it can be accomplished by leading or forcing the people to make the change, easier still if the times are ripe for it. The absence of biological education among people leaves them a prey to humbuggery. Science would negative all untruth and rescue the masses from the horrible ignorance that blinds them. It was a difficult task as an example of this condition, to educate a patient out of the notion that a mind reader was injuring her by keeping his mind intent upon her when miles away. By instructing her that the claim was foolish and that it was her own ignorance that distressed her she finally recovered and defied the mind reader, who was trying to defraud her of some property.

The ancient Phallic worship, from which it is said obelisks and steeples date, was in many respects an idealization of the origin of life, worship of the *pater omnium vivum*. It remains for our modern days to unearth some new abominations as disclosed in the trial of Diss De Bar in London, October, 1901, charged with defrauding by fortune telling. She established a sect called theocratic unity, claimed the attributes of divine power, and induced girls to misconduct themselves under the belief that it was a necessary part of their religious devotion, under vows of secrecy and belief in Diss De Bar as a deity. She and another criminal had previously engaged in many varieties of confidence games in America. "Sex Worship," by Clifford Howard, is an exposition of the Phallic origin of religion, published in 1897. In it he claims that aphrodisian cults were probably both innocent and beneficial at the times and places of their origin.

Very much as dialects may become languages, or tribes swell into nations, so any silly superstitious fake is liable to unexpectedly grow into a full religion like that of Shakerism, or Eddyism, or Dowieism, while others, like Teedism and Swedenborgianism, die sooner or later, as, in fact, many now successful religions of today also will, save those which through natural selection have come to stay, as the sturgeon represents a very early form of fish whose descendants may see the end of this planet, and as Macaulay

predicted, would be the case with the Roman Catholic religion, when the New Zealand traveler visits the ruins of London in far off ages.

Very much of the primitive construction of mythology can be seen in the action of children who start out with the idea of there being a Santa Claus or St. Nicholas. They dictate long lists of articles they want him to bring them, showing the insatiable greed of the little folks like that of their savage progenitors. They are anxious to propitiate him by promising to be good and tidy and to learn lessons, etc., but they act as though he could be fooled just as their parents may sometimes think they can juggle with the almighty. The little folks grow quite imaginative and give accurate descriptions of all sorts of things done by Santa Claus and are capable of narrating interviews with him. When children are finally told that it is a deception they sorrow over it as though a dear friend had been lost, as one whose religion has been assailed or destroyed. This reverence of a gift-giving saint is an advance upon the fear of a hateful, revengeful spirit and is later a step in superstition. But even in civilized communities we find a great mixture of god and devil worship in the fear of a revengeful and loving deity.

That superstition, belief, religion, or philosophy, call it what you will, that accords with the inclinations and comprehension of a people, or can be impressed upon them, is the one that survives. Hence the belief merely exhibits the capacity of the people and its acceptance is no measure of the truth of the belief.

There is a remarkable similarity in the religions of mankind. Oppenheim⁴⁴ says the Hindoo Chrishna, the Persian Mithras, the Egyptian Osiris, the sun gods, Hercules, Dionysus and others, were all called saviors and worshipped as such. They had much the same history. They were born on the 25th of December, the day when the sun was supposed to be the farthest south, they all had virgin mothers, and the Scandinavian Frigga, the Buddhist Maya-Maya, the Egyptian Isis, the Hindoo Devaki, the Greek Semale are identical; they had strikingly similar life histories, they performed much the same miracles, the number of their disciples was curiously often alike, they were persecuted, slain and

⁴⁴ The Development of the Child, p. 122.

arose from the dead to ascend into heaven. A triune god was worshipped all the way from the rugged land of the Scandinavians to the fertile banks of the Egyptian Nile. The Egyptians introduced public festivals, processions and solemn supplications, and the Greeks learned from them, says Herodotus. Isis as part of the trinity, though with another name, standing in a crescent moon, was a common image and her effigy with the infant Horus in her arms has come down to us as the Madonna and child. The Ephesians forsook their Diana, "the mother of God," for the Virgin, and when Cyrle and his council decreed that the ancient title was conferred on the Virgin the Ephesians wept for joy.

Man is in a certain phase of his being religious, he seeks a higher power for praise or blame, for punishment and reward, and according to his intelligence is credulous or skeptical of the claims of those who announce themselves as knowing all about God. The weaker in mind are most prone to seek religious consolation whether imbecile or dying and the undeveloped emotional female mind is notoriously the one easiest imposed upon. The child is most receptive of the ancient accounts of miracles. His inability to understand properly is taken advantage of and he has to escape later from belief in the fables he has been taught. He accepts the creeds forced on him, but is unable to assimilate the reasoning by which these creeds are upset, and the unreasoning adult often sees nothing absurd in a creed which consigns infants to hell or the monkey gravity with which a later convention of sanctified apes concludes that this part of the creed needs revising. This absurdity of occasional revision of creeds that are worn out until sometimes there is nothing left of the creed, or it is merely ignored, occurs when the old belief is inconvenient and a new one must be arranged. But these creeds, whether they are mended or not, are tacitly accepted, just as oaths in secret societies are taken without previous inquiry into their nature.

S. L. Clemens⁴⁵ describes the harsh measure used by the Christian missionaries in China, after the massacres of missionaries and the allied powers' retaliation, indemnifying themselves one and one-third times by forced means, and suggests a commandment: "Thou shalt not steal except when it is the custom of the coun-

⁴⁵ North American Review, April, 1901.

try." Adopting the custom of the Chinese, revenge instead of Christian forgiveness is "spreading the gospel." He concluded that those missionaries are sincere, self-sacrificing, warm-hearted, all heart in fact, but often with little head; their judgment is awry. To enable the religion of non-aggression to be taught the missionaries resorted to Chinese methods of aggression. The fact is "business" methods rule such organizations and the missionaries merely submit to higher orders.

But the world moves, and some parts faster than others, and progress continues notwithstanding the clogs and impediments of superstition and the grab instinct that takes advantage of it. It would be foolish to assert that all religions and all religious institutions and priests are bad. Such is far from being the case, but any institution may be changed, subverted, corrupted, and so may the persons connected with it. Some movements are bad from their very start, others are intended to be only good and may finally be corrupted. A vast range of "belief" and ceremony may exist in the same denomination at distances apart, precisely as dialects may separate original languages. The American churches differ greatly from the European owing to public schools and free institutions unfitting Americans for slavery of intellect. Under Spanish rule the Philippine friars could be oppressive, but intelligent American Catholics made such representations to Rome that the pope was compelled to move these autocratic monks to Venezuela and Ecuador.

The "Truce of God" began in A. D. 1034, necessitated by the fierce incessant private and public wars everywhere in Europe. Ecclesiastical influence induced the people to abstain from fighting at least on holy days, and so in this instance superstition exerted a power for good. The monasteries of the middle ages were refuges for learning and enabled students to escape from strife, though this was incidental among communities endeavoring to obtain a living without work.

The crusaders visiting Rome saw that personal interest had very much to do with religious control and in addition to this Musselmans and Christians grew better acquainted with one another and found that interested parties had lied to them concerning foreigners and so they ceased to regard each other as wholly bar-

barian. In spite of the bible teaching that the poor are to be especially considered the churches have largely fostered the idea that "God made the rich and the devil the poor." Not by words but by acts. The feeling is very prevalent among the poor that they are not wanted in a church as they are unsightly and can contribute nothing to the expenses. And even an occasional Aztec descendant thinks of such things as inconsistencies. One remarked that after all he did not think much of his sun god for he could only go one way while men go anywhere they please.

When superstition is overworked people become accustomed to be cursed and the anathemas cease to be effective. Prince Louis of France did not hesitate to agree to take the English crown though excommunication would result, caring as little for this as his father cared for the pope's forgiveness of his sins, and interdicts lose force also in time if too often used. People in King John's day observed that the sky did not fall because the pope was angry, and finally defied him. The expectation that Biela's comet would destroy the earth in 1832 was taken advantage of to terrify the people of Paris, who bought seats in paradise from the priests at very high prices. After a battle in South America the bodies of the soldiers were found with instructions to St. Peter to admit the bearer to heaven as he had paid for the privilege to the priest who signed the pass.

Reformers have often sprung from within an institution and have successfully spread. Pelagianism of the fifth century was started by the monk Pelagius, who brought up the matter of free will in the relation of the divine control, provoking a great intellectual discussion. In the eleventh century a young Milan priest named Patereues denounced the corruption of the clergy and brought about an uprising. The Hyksos rulers of Egypt were monotheists and despised the polytheism and idol worship of their predecessors. In B. C. 2754 they destroyed the temples but in B. C. 1700 the temples were restored, showing that a thousand years' release from manifestations of superstition will not kill it off as an inherent human possession. As long as man exists he will be more or less superstitious and the masses will be more so than less so.

Notwithstanding the religious contention in England in which

first one sect was slaughtered and then another in civil strife, at last when Spain threatened England under a religious pretext the English Catholics proved their loyalty in every way. Spain again prated in 1898 about religion justifying all that country did, but only one priest in the entire United States asserted publicly that American Catholics should join with Spain, and he was promptly suppressed by his own American co-religionists. Thus there appears a relativity of religious bigotry. Under Elizabeth patriotism triumphed over superstition. The English of different sects were more to one another than strange bloodthirsty Spaniards could be to English Catholics. And in the very nest of popery the Italians prefer that church and state should be separate, and surely the world has moved indeed when Rome shackles its emperor and recognizes him only as a priest. Thus separating the priest-king function that came down from the patesis of Babylon.

The Eleusinian mysteries among the ancient Greeks were a source of faith and hope to the initiated, as are the churches of modern times. Secret holy doctrines were aroused amid solemn imposing rites with promises of blessing to the sincere and those with pious trust. The origin is in a mythical antiquity and the priesthood was hereditary. Isocrates said, "Those initiated have sweeter hope of eternal life." In moments of great peril converts asked, "Are you initiated?" as though having been so were preparation for another life. The Goths under Alaric in 395 destroyed the temples at Eleusis in their devastation of Greece and the rites ceased. In this we have a probable instance of morality, kindness and some doctrine of eternal life preceding the Christians, and not associated with other religions. But it does not require this testimony alone to show that the multitude of religions were not connected with the best emotions of the human heart, and that here and there may have been isolated philosophies of nature, but it was not until comparatively recent days that the attempt was made to make religion moral. It was natural that whatever was found to be for the good of the race should be formulated by some thinker or philosopher, and in time it would become a religion, or be appended to some existing superstition by way of reform or compromise.

The Sandemonians were a small sect founded by a Scotchman at the time of the American revolution. It was taught by them that "an intellectual belief would insure salvation without faith and that this belief would insure Christian virtues."

When Alexander issued his letters, orders and decrees styling himself King Alexander, the son of Jupiter Ammon, they came to the inhabitants of Egypt with an authority that can now hardly be realized. The free-thinking Greeks, however, put on such a supernatural pedigree its proper value. Olympias, who, of course better than all others knew the facts of the case, used to jestingly say that she wished Alexander would cease from incessantly embroiling her with Jupiter's wife. Arrian, the historian of the Macedonian expedition, observes, "I cannot condemn him for endeavoring to draw his subjects into the belief of his divine origin, nor can I be induced to think it any great crime, for it is very reasonable to imagine that he intended no more by it than merely to procure the greater authority among his soldiers."⁴⁶ The Macedonian rulers of Egypt prostituted the religious sentiments of their time to statecraft, finding in it a means of governing their lower classes. To the intelligent they gave philosophy. Constantine found public sentiment largely leaning toward Christianity and when Diocletian abdicated, A. D. 305, saw the advantage of heading the movement. Place, power, profit, were in view of whoever joined the conquering sect. Crowds of worldly persons who cared nothing about its religious ideas became its warmest supporters. Pagans at heart, their influence was soon manifested in the paganization of Christianity that forthwith ensued. But the emperor did not conform to the ceremonial requirements of the church until the close of his evil life, A. D. 337.

There are sincere workers in all religions, but seldom do we find the broad minded, generous, thoughtful bishop such as Manzoni mentioned,⁴⁷ who did all he could to lessen the plague which the ignorance of his people fed, and his priests could not fathom the bishop's intentions or ideas, so much lower in intelligence were they. But in most cases the higher official is a shrewd self-seeker, and sincerity exists among the humble who refuses to use

⁴⁶ Draper, Conflict of Religion and Science, p. 8.

⁴⁷ I Promessi Sposi.

any effort at intrigue to advance himself above his fellows. The well-fed, rosy, wine-drinking, sleek-clad, finely housed and attended rulers are, so far as character is concerned, the least worthy of the organization, while the humble missionary on a starvation salary is often the one who redeems an otherwise corrupt body of men.

Such men as De Smet and Xavier risked their lives for what they sincerely thought to be the best interests of their fellow men, while others high in the command over them, with lives barren of any good deed, would point to these self-sacrificing ones and say, "See what good we do!"

It does not follow, either, that mere lowness of station guarantees humility of heart, goodness or even ordinary kindness. I knew a priest who came to the county insane asylum to visit the attendants; he arrived at the asylum only upon paydays, and on one occasion he was catechizing a demented woman and holding his missal over his head he commanded her to answer or he would strike her with the book. The vast range of intelligence and kindness between a Xavier and such a priest need scarcely be hinted.

O. W. Holmes notes the change during the past century in men's opinions concerning their beliefs. "Since then protestantism is more respectful in its treatment of Romanism, orthodoxy in its treatment of heterodoxy, Christianity in its handling of humanity. The limitations of men are better realized, the impossibility of their thinking alike, the virtue of humility is found to include many things which have often been considered outside its province, among others the conviction of the infallibility of our special convictions in matters of belief which appeal differently to different minds."

"How can we seek a single faith to find,
When one in every score is color blind;
If here on earth they can't tell red from green,
Can they see better into things unseen?"

As an indication of this attempt of discordant religions to become reconciled, Lyman Beecher wrote a book entitled "Ten Great Religions," in which there was a ludicrous but sincere endeavor

to boil down heterogeneous "beliefs" and contradictions of dominant faiths; the neglected million or so of other superstitions should have been at least referred to. The only possible reconciliation is on the basis of psychology as outgrowths of fear and rapacity, and later the better emotions influencing the old savage conceptions of deity.

There may be good to multitudes in religion, but it must not be forgotten that it affords opportunity to the scamp who seldom fails to take advantage of it. In Mohammedanism, Eddyism, Dowieism, Mormonism, we see the money pour into the sanctuary from the simple-minded, good, honest, sincere, gullable mob who would not be, ordinarily, bad as long as it can find an excuse to be good, unless directed to a St. Bartholomew or Mountain Meadow massacre by their priests.

Agnosticism is expanding because from the ranks of intellectual thinkers whose conduct is guided by justice and morality it will descend to the lawless upon whose wicked impulses some restraint is now placed by the fear of future punishment, but how far this belief does restrain them is quite questionable, more than likely those who accept such ideas would not do wrong anyway, and we positively know that multitudes who profess the most orthodox religion, including fear of devils and hellfire, are in no wise made better or deterred from evil deeds. Even brigands have their father confessors and churches.

Huxley leaves his mind a scientific blank on questions of lunar politics and resents the claim of any one to the right to label him as believing in this, that or the other matter. The agnostic does not find it necessary to have an opinion on every subject. It is the ignorant who always has one and asserts it with confidence. Science shows that man made god after his own image, anthropomorphism, and then claimed the reverse.

Among early attempts at emancipation from traditional drilling and training of children so they could grow up into servile instruments to the greed and inconsideration of power in church and state, about 1360 the "Brethren of the Common Lot" was founded in Europe and in the Netherlands started the first public schools.⁴⁸

⁴⁸ W. E. Griffis, *The Influence of the Netherlands*, p. 3.

The fable or story was nearly the only means of public instruction of ancient people and today the romance and drama are powerful means of reaching the masses, who could not be induced to learn important matters otherwise. Much quickening of sympathy and moral training is obtained through well-acted plays, particularly such as Shakespeare's, and it is worth considering if more humanitarian ideas do not filter to the common people through that source than from any other. The theater in Japan as elsewhere is the outgrowth of religious rites and its evolution may be said to have been from empty superstitious ceremony, solemn nonsense, to entertainment and incidentally teaching uprightness and other things that make people better citizens.

When the illusions vanish and delusions are destroyed, when the devout finds his idols made of clay and religions hugged through life come to be abandoned, the heart grows sick and yearns for something else to fasten upon, and often the cry goes up "What use is it to disturb beliefs?" particularly such as afford comfort to the believer? Well, if this comfort is like that derived from opium or whisky, if you are in a false paradise and asleep to danger, if your mind is deadened to actualities "Cui bono?" may be answered that you are given the truth, you are freed from your superstitions, your ghosts, terrors, hobgoblins. But the African in his wild state is not prepared to give up his idols for intangible civilized ideas. The mind must evolve, adjust to such changes slowly.

In his "Essay on Beauty," Ralph Waldo Emerson says:

"Astrology interested us, for it tied man to the system. Instead of an isolated beggar, the farthest star felt him, and he felt the star. However rash and however falsified by pretenders and traders in it, the hint was true and divine, the soul's avowal of its large relations, that climate, century, remote natures as well as near are part of its biography. Chemistry takes to pieces but it does not construct. Alchemy which sought to transmute our elements into another, to prolong life, to arm with power—that was in the right direction. All our sciences lack a human side. The tenant is more than the house. Bugs, and stamens, and spores on which we lavish so many years, are not finalities, and man, when his powers unfold in order, will take nature along with him and

emit light into all her recesses. The human heart concerns us more than the peering into microscopes, and is larger than can be measured by the pompous figures of the astronomer."

Had Emerson's broad intellect been engaged in scientific directions he would have been heartily ashamed of having written such stuff. Herbert Spencer writes that science opens up new beauties in the universe to which the uninstructed are blind. Hugh Miller, Herschel, Faraday, Tyndall, Huxley could have made Emerson's heart leap for joy at their revelations, and his writings would have been enhanced in their power for good.

The very reverse of Emerson's idea is true.

Astrology and alchemy with other "philosophies" of the days of sorcery, the black art by which one creature hoped to be able to take foul advantage of another, were emanations of the night of time, when burnings at the stake were frequent alike for thinkers and witches. The horoscope is still cast by Indian fakirs, and astrology thrives amidst appropriate surroundings. And doubtless Emerson would have opened his eyes in surprise if asked whether he preferred to live in the land of jungles and the suttee rather than among spectacles and baked beans.

Looking back over the evolution of the sciences, it is plain that in astrology and alchemy, it was not the love of science that actuated these studies; the object primarily was puerile. The philosopher's stone, which would transmute all metals into gold; the elixir vitæ, which was to confer everlasting youth, were the absurd things sought for, and so in the search, expeditions throughout the world were actuated by greed and love of power. The march of Coronado hunting for the seven golden cities, Ponce de Leon's childish rambles through Florida looking for the fountain of youth, are instances in point.

It is quite probable that among the ancient Roman, Greek, and Egyptian priests many physical laws were understood, but the only use they made of them was to deceive the people and enrich themselves. Among the vast multitude of today such a thing as cultivating a science for its own sake or to benefit the public would seem absurd, and so the medical student of lesser calibre would complain upon being compelled to learn chemistry and

botany, and especially bacteriology, when in many instances all these bear directly upon general medicine.

Chemistry sprang from alchemy, and astronomy from astrology. At first the facts that were discovered could not be used and so they were mainly regarded as curiosities. Eventually these neglected discoveries were found to be of great use. Had it been possible for the childish ancient philosophers to have developed the sciences to their present status, most of them would have certainly made selfish and oppressive uses of their knowledge. As knowledge is slow of growth, so it broadens the intellect of its votaries, making them more merciful and considerate, particularly nowadays when scientific fakirism is not so possible as in olden times; and so it would seem that as fast as the world deserves the comforts afforded by science it receives them, and no faster.

Probably even in the future if the elixir vitæ were compounded and immortality were thus placed in the grasp of everyone, no one would be so foolish as to use it, for all would realize that perpetual life would be perpetual suffering.

Franklin was asked once, what was the good of the discovery of the galvanic spark. He asked, "What is the good of a baby?" That baby has since grown to giant size. The vast accumulation of scientific facts by which the world is today beautified and made more comfortable have been piled up amid sneers and opposition. The olden searcher for knowledge wanted to make a short cut to power over his fellow men; the student of today learns to spread his knowledge as a means of helping himself through helping others. So as intellects broaden, men find that by all working for the common good, the individual good would be best conserved.

Imagine Nero or Cleopatra with all our present scientific knowledge and resources at command, would they not have made the earth a pitiable planet? But this knowledge cannot be owned by any single mind, and hence working in unison for the common good is the result of the existence of that knowledge.

As science gradually inculcated altruism, perforce, the geologist idea would be that as fast as the world deserved good things it received them, but the more rational view would be that the comforts and conveniences of the peaceful arts and sciences were the product of mental broadening, and that egoism developed into

an altruism through selfish realization that individual interests are best secured through individuals seeking the general good.

The Emersonian idea of "seeing good in everything," rather persistently sees good where it does not exist, and fails to recognize it elsewhere. It is well not to be unjustly captious but to deliberately blind yourself to the superabounding rascality and designs of hypocrites is to do wrong to the lambs by cultivating the wolves and to long for a return of such childish arts as astrology is about as sensible as regretting that we have modern bath tubs, steamships and telegraphs. Why not sigh for the times when we had only the skins of animals to cover us and huddled together in trees because we did not know enough to kindle fires? The multitudes consist of mere simple savages appareled in civilized garb, enjoying what the few thinkers of the past have offered them. Take from Emerson what the real arts and sciences gave him and he would have only a horoscope marked on a palm leaf and a few vermin to divide his attention.

Socrates died a martyr to intellectual liberty, Erasmus fought priestly intolerance, Giordano Bruno was a martyr to rights of conscience, the founders of the Dutch Republic achieved both liberty and toleration, Cromwell befriended the persecuted Jews, Voltaire did much for the spirit of toleration. Thomas Paine, Jefferson and Madison established the American government on the basis of religious freedom. During the nineteenth century the idea of liberty of conscience grew. Bonnet-Maury⁴⁹ remarks that "The most despotic governments are tolerant toward the subjects who are too numerous or too useful to be killed or exiled." The area of toleration is widening. By the treaty of Westphalia in 1648 religious equality was granted to the catholic and protestant churches though consistently condemned by the papacy. Bismarck struggled long with the pope in vain. In self defense Germany was compelled to drive out the Jesuits in 1872, a political, not a religious, measure.

Religious progress began in Austria in 1848 and by the law of 1868 liberty was extended to certain churches recognized by the government.

The Waldenses were emancipated in Italy in 1848 and the

⁴⁹ History of Liberty of Conscience.

free exercise of worship was guaranteed. Since 1870 free Italian churches have increased and even in bigoted old Spain a feeble religious liberty struggled up in 1869, at least the heathen there may worship in private houses. Switzerland comes next to America in religious freedom. Bonnet-Maury thinks that since the edict of tolerance of Louis XVI. respect for liberty of conscience has grown.

England, Holland and Scandinavia are free in matters of worship even where churches are state institutions, and by the treaty of Berlin in 1878 Turkey was forced to tolerate other religions than its own among foreigners, but it revenges itself on helpless Armenians.

The English act of toleration of 1689 led up to establishing rights of conscience, and finally Jews, unitarians and catholics were included, in the nineteenth century, until the British dominions with America represent the most abounding freedom to think as you please in superstitious or religious matters so long as you do not burn witches or compel others to adopt your ideas on these subjects. An old definition of liberty was "to be able to do as you please and compel others to do the same," and that is about the idea many would have of religious freedom. Disestablishment of the English church will be the next great step to getting barnacles off the neck of Britons.

China, Mexico and South America have fallen into modern lines as to toleration. In the United States the Jews have not only been free but treated with a fairness never before equaled. James Grant Allen⁵⁰ says Christians threw live snakes into assemblies of other Christians of whom they disapproved. Bigotry or the worship of one's own opinion is giving way to charity. Pulpits even are occasionally exchanged by representatives of various denominations. In such and other matters Professor Barrows of Oberlin thinks that America has set an example that will be universally followed.

The thoughts of the unlearned common people are determined by perfectly natural laws, they incline to awe, to be afraid of the unknown, and to hand down from a still more unlearned past all sorts of goblin and fearful stories, about such as the vulgar nurse

⁵⁰ Reign of Law.

tries to frighten children with. The average unscrupulous man with a little higher intelligence, with no better idea than that the world owes him a living finds these mental attitudes already at hand and takes advantage of them to control the crowd through such ideas, as demagogue or hypocrite. Though the frequent sincerity of many priests and politicians cannot be doubted.

In the multiplicity of religions there is more safety for the people. Where a single religion is dominant, as in Russia, the people are degraded into animals by the priesthood, who, as Tolstoy says, openly violate every tenet of Christianity, while pretending to teach it. So when sect after sect splits off from old beliefs it is the disintegration of and dissent from established superstition, leading finally to liberty of opinion, and escape from old methods of enslaving the mind; a weaker master is chosen and finally there is emancipation.

Between the extremes of denunciation of all religion and slavish submission to a belief there is a safe middle ground, there is the devout sincere mother who accepts religious teaching unquestioningly and imagines that her goodness is wholly due to her religion, when without religion she would have been every particle as good, and have cared for her children just as anxiously, and taught them just as carefully.

Nor are the ministers, priests, and others who live at the altar hypocrites, by any manner of means. Some of the greatest and most sincere intellects have been in all religions, usually the best being in the humbler ranks. Many have died for their beliefs proving their sincerity, but not proving that their beliefs were therefore true.

When the ceremonies, the appeals to the senses and emotions, are things of the past, when the massive churches, closed six days in the week, are converted to the uses of the poverty-stricken and other sufferers, when "the church of this world" develops as a means of helping humanity upward and onward, then religion will have passed from the forest of monkeydom to the broad plain of upright intellectual sympathetic manhood.

If the highest religion becomes that of working unselfishly for other individuals and the race, impelled thereto by promptings that have become innate, emotional and intellectual, you may say

intellectualized and spontaneous, then Voltaire, who sought the good of his fellows without caring to gain even the credit for it, whose most charitable work was done anonymously so that it might be the most effective, and not be complicated with mention of his name which always produced vindictive, lying animosity, will be regarded as among those who possessed this highest type of religion, and whose happiness in his work was recognized in his being called "the laughing philosopher."

But it must not be forgotten that while mankind is mentally equipped as we find him, some kind of religion is necessary for him to induce him to behave himself, until he advances intellectually to the point where he can do right from choice and not through fear.

CHAPTER VIII.

LANGUAGE.

Darwin¹ says: "Quadrupeds use their voices for various purposes as a signal of danger, as a call from one member of a troop to another, or from the mother to her lost offspring, or from the latter for protection to their mothers." Darwin notes the differences between the voices of the two sexes, as the lion and the lioness, bull and cow. "Almost all male animals use their voices much more during the rutting season than at any other time, and some as the giraffe and porcupine are said to be completely mute except at this season." Old stags bellow at the breeding season and before their battles, but are silent during the battle. Many animals use their voices under strong emotions as when enraged and preparing to fight, just as a man grinds his teeth and clenches his hands in rage or agony. Stags challenge each other by bellowing. The lion terrorizes with his voice and erects his mane to appear formidable." The jealousy and rage, continued during many generations, may at least have produced an inherited effect on the vocal organs of the stag as well as other male animals."

The male gorilla has a tremendous voice and the gibbons rank among the noisiest of monkeys, calling to each other as the beavers and other quadrupeds do. *Hylobates agilis* emits a correct octave of musical notes according to C. L. Martin².

Many birds have organs for singing but do not sing and so apes may have organs for speech and not use them because not trained or for other reason.

Darwin³ says: "The diversity of the sounds, both vocal and instrumental made by the males of many species during the breeding season, and the diversity of means for producing such sounds

¹ Descent of Man, Ch. XVIII, Vol. II.

² Darwin, Descent of Man, Ch. XVIII, Vol. II.

³ Darwin, Op. Cit., Ch. XIII, Vol. III.

is highly remarkable," somewhat as insects are provided. The bird using its voice as a mere call could have, step by step, improved it into melodious love song. "It is curious that in some classes of animals sounds so different as the drumming of the snipe's tail, tapping of the wood-pecker's beak, harsh trumpet-like cry of certain waterfowl, the cooing of the turtle dove, and song of the nightingale, should all be pleasing to females of the several species. By chirps and songs the parent bird warns of approaching danger, calls to mates or cheers its young. Darwin thinks the sounds uttered by birds offer in several respects the nearest analogy to language. The same instinctive cries are used to express emotions. They learn songs from their parents. Some birds of the same genus differ from others in speech as do people in dialects. "An instinctive tendency to acquire an art is not peculiar to man."⁴ Some birds rehearse in private and practice improves. Bird songs are the result of imitation and account for development of bird-language in the past. In the least specialized birds the speech is infantile. Next comes a screaming or croaking. Samuel N. Rhoads⁵ classifies bird language into three stages of mimetic development. 1. Mimics of sound in animate nature exclusive of other bird notes. 2. Mimics of sounds in inanimate nature. 3. Mimics of song and human language, and he separates the sound mimics into mimics of water and wind sounds, rippling, raining, rushing water, and the blowing, whistling of the wind. He concludes that "between two opposing tendencies, one urging to variation the other to permanence (for nature itself is half radical, half conservative) the language of birds has grown from rude beginnings to its present beautiful diversity, and whoever lives a century of milleniums hence will listen to music such as one in this day can only dream of. Inappreciably but ceaselessly the work goes on. Here and there is born a master singer, a feathered genius and every generation makes its own addition to the glorious inheritance." Bird sounds occur in great variety, one has a note like breaking of glass, another, the bell bird, makes a noise like the ringing of a bell, sometimes like the striking of an anvil. The horrible laugh of the Demarara goat sucker sounds

⁴ Ibid.

⁵ American Naturalist, 1889, p. 95.

to some hearers as though some one were being murdered. The jackass penguin brays like a donkey and the laughing king-fisher, or laughing jackass of Australia, is often mentioned. The boom of the bittern was a familiar sound in many parts of England before the drainage of the fens. The American species makes a noise like hitting a stake with a mallet. The night heron has a hoarse croak. The fin-foot can make a deep growling sound like a wild beast by drawing air into its body and forcing it gradually from a duck-like throat. Snipe make a drumming noise, but only as they swoop down with half closed wings and outspread tail, compared with the bleating of the goat. W. H. Hudson says that in Argentina the screamers merely utter their powerful scream of alarm occasionally, while at night or high in the air they are melodious and often congregate and sing in concert and at intervals, counting the hours as the Guachos say, somewhat as our domestic rooster does. The screamers are the noisiest about nine, midnight and before dawn, but varying in different districts.

The lapwing of India is called "did-he-do-it" from his cry which alarms all worthier game and is cordially hated in consequence. Stilts of the plover tribe draw you away from their nests with their cry: "kit, kot, kit." The starling is a mimic and is able to copy familiar sounds faithfully, and is a very good vocalist. In Argentina spring is announced by spine-tails with harsh discordant notes. The lyre-bird imitates songs and cries of other birds and has play grounds like bower birds, each having its own parade ground. The long tailed trogon has a ventriloquial plaintive ha-hau, which sounds a long way off though the bird may be near you. The spur-fowl of Ceylon similarly misleads sportsmen and the purple capped lory is a ventriloquist. The Australian black swan has a musical call note when flying overhead at night. The bull finch can be taught to whistle the notes of human songs quite sweetly.

The male white capped tanager remains near the nest and jerks out low notes of melody as though chattering love to the female on the nest. A. G. Butler tells of a blue robbin that "gave every insect he could catch to his sweetheart who coyly refused him for a fortnight, and when finally accepted he shrieked with

joy for half an hour before and ten minutes after the pairing." Parrots and some other birds are able to articulate and while in the main the words are not associated with ideas in their minds in a few instances the words may be connected with definite meanings for them. Song and call notes of birds are learned from parents or foster-parents and are no more innate than is the language of man. The ability to develop the sounds is inherited but the language is gained through instruction. The first attempts of a bird to sing may be compared to the imperfect endeavor of a child to babble. Birds of the same species at a distance from one another have dialects and allied though distinct species have separate languages.

The domesticated fowl has a dozen significant sounds one of which gives warning for danger as from hawks, and hens recognize this signal.

The house mouse is fond of music to which it listens attentively, and there are singing mice. One was known to trill up an octave standing upon its hind legs and its throat vibrated like that of a song bird. Male frogs and toads are musical. Hylae are quite harmonious chirpers. The chirping of a cricket is caused by the rubbing of the fore wings, elytra, together. Their organs of hearing are on their fore legs. If a man could leap in proportion to his height as far as a flea does in proportion to his, he could jump a hundred feet, and if a man could sing as loud as a grasshopper cicada, his voice would be heard many miles. A hoarse rumble in the throat of the elephant indicates anger or want as when a calf is calling for its mother. Pleasure is expressed by a continued low squeaking through the trunk. The shrill trumpet varies in tone and expresses sometimes fear or anger. A roar from the throat, fear or pain. Alarm or dislike is indicated by rapping of the trunk upon the ground and blowing through it at the same time, as when a tiger is present.

Livingstone says there is but little difference between the roar of the lion and that of the ostrich. The amount of noise one wolf can make is surprising. And wolves learn to bark by association with domestic dogs. The Australian dingo or wild dog never barks.

Ants communicate with their antennæ by what can be called touch sense gesture, comparable to deaf and dumb signs. Various noises such as croaking, snapping, etc., are made by certain species of fish. The drumming noise of the *Umbrinas* is said to be heard from a depth of twenty fathoms. The males alone make the noise to attract females.

Batrachians are noisy fellows during the breeding season. The females select the males with loudest or most pleasing voices. The male Galapagos tortoise, *Testudo nigra*, at the pairing season utters a hoarse bellowing noise and the female is dumb. The crocodile makes a great noise and splash and swells up to attract the female, as little boys run and parade before their little girl admirers, and the knights errant of old swaggered before their lady observers.

Darwin observes that the domesticated dog has learned to bark in four or five tones. The bark of eagerness as in the chase, of anger as well as growling, the yelp or howl of despair, the baying at night, the bark of joy and the one of demand or supplication. Dogs understand many words and sentences. They are at the same stage as infants at ten or twelve months who understand many words but cannot speak. Max Müller thinks that animals cannot form ideas, but Darwin denies this and shows that a dog forms an idea of cats or sheep and knows the words as well as a philosopher, and it is proof of a vocal intelligence to an inferior degree.

Bears leave messages and warnings by scratches and odors left on barks of trees and dogs communicate, as may be readily observed by any one, with other dogs by leaving their odors on posts, stumps, stones or any convenient object above ground and other dogs recognize the route of friends or strangers by nosing around these canine intelligence offices. Miserly crows are said to be able to count thirty and to drill and talk to their young.

The speech of animals is unknown to us and often for similar reasons we cannot distinguish foreigners apart.

R. L. Garner⁶ studied the speech of various monkeys and determined nine sounds used by the Capuchins, and the sound for

⁶ The Speech of Monkeys, 1892.

food and another for alarm in the Resus dialect. A brown Cebus readily understood the phonograph sound of his call for food and fled in alarm when he heard the note of danger. Garner concludes that the sounds made by monkeys are voluntary, deliberate and articulate. They are always addressed to some certain individual with the evident purpose of having them understood. The monkey indicates by his own acts and the manner of delivery that he is conscious of the meaning of the sounds. They wait for and expect an answer and if they do not receive one they frequently repeat the sounds. They usually look at the person addressed, and do not utter these sounds when alone or as a mere pastime, but only at such times as someone is present to hear them, either some person or another monkey. They understand the signs made by other monkeys of their own kind and usually respond to them with a like sound. They understand these sounds when imitated by a human being, by a whistle, a phonograph or other mechanical devices, and this indicates that they are guided by the sounds alone, and not by any gestures or mental influence. The same sound is interpreted to mean the same thing and obeyed in the same manner by different monkeys of the same species. Different sounds are accompanied by different gestures, and produce different results under the same conditions. They make their sounds with their vocal organs and modulate them with the teeth, tongue and lips. The fundamental sounds appear to be pure vowels, but faint traces of consonants are found in many words, especially those of low pitch. Darwin notes that in Paraguay the Cebus azaræ utters at least six distinct sounds which excite in monkeys emotions corresponding to the sounds. The movement of features and gestures of monkeys are understood by us and they partly understand our expressions of the kind. Some gibbon apes sing, and Professor Hæckel claims that the gibbon speaks quite fluently. He has not many sounds but these few he uses with so much expression that he is able to make known a great variety of wishes and impressions. He talks almost constantly and even when left alone he speaks to himself. The *Hylobates leuciscus* or ash gray gibbon of Wagner specially investigated by Hæckel uses his few words with gestures and face grimaces and tones so that the Javanese can understand

his meaning, wishes and troubles. The oa, as he is called, purrs like a cat when satisfied and at play uses loud sounds. He shouts for food with outstretched hands. The monkey-chatter may be likened to "metaphysics" which Müller calls a disease of language.

The chattering of some monkeys may convey their meaning by modulations or intonations somewhat as a prolonged or interrupted whistle may be different signals. According to Blanford the voice and gestures of all macacques are similar, quoting Colonel Tickell, another observer, who says, "anger is generally silent or a hoarse "heu." Ennui is expressed by a whining "hom." Invitation, deprecation, entreaty, by smacking of lips and grinding and a chuckle. Fear by "kra" or "kraouk."

The chacma baboon has a warning cry like the German "hoch," much prolonged. The capuchin monkey cries with a low whistle which serves to attract attention. The Indri lemur's plaintive mournful cries resemble agonized human wailings. The aye-aye (lemur) is called Hi-Hi by the natives from the sound it makes. It taps the bark and listens for its prey beneath, thus saving time and labor. The howlers use their drum shaped larynx with little effort; the noise is probably useful in driving away enemies. Travelers speak of the sounds as dreadful. The young orang screams like a child for what it wants. The gibbon greets the rising and setting sun with cries morning and evening sounding like "Hoo-lock," and suggests that name to the natives, or "whoop-poo."

Music, says Darwin, affects every emotion, but does not in itself excite in us the most terrible feelings of horror, rage, etc. It awakes the gentler feelings of tenderness and love which readily pass into devotion. It likewise stirs up in us the sensation of triumph and the glorious ardor of war. These powerful and mingled feelings may well give rise to the sense of sublimity. We can concentrate, as Dr. Seeman observes, greater intensity of feeling in a single musical note than in pages of writing. Nearly the same emotions, but much weaker and less complex, are probably felt by the birds when the male pours forth his volume of song in rivalry with other males, for the sake of captivating the female. Love is still the commonest theme of our own songs. As Herbert Spencer remarks, music arouses dormant

sentiments of which we had not conceived the possibility, and we do not know the meaning; or, as Richter says, "tells us of things we have not seen and shall not see." Conversely, when vivid emotions are felt and expressed by the orator or even in common speech, musical cadences and rhythm are instinctively used. Monkeys also express strong feelings in different tones, anger and impatience by low, fear and pain by high notes. The sensations and ideas excited in us by music or by the cadences of impassioned oratory, appear from their vagueness yet depth, like mental reverberations to the emotions and thoughts of a long-past age. All these facts with respect to music become to a certain extent intelligible if we may assume that musical tones and rhythm were used by the half-human progenitors of man, during the season of courtship, when animals of all kinds are excited by all passions. In this case from the deeply-laid principle of inherited associations, musical tones would be likely to excite in us, in a vague and indefinite manner, the strong emotions of a long past age. Bearing in mind that the males in some quadrumanous animals have their vocal organs much more developed than in the females, and that one man-like species pours forth a whole octave of musical notes and may be said to sing, the suspicion does not appear improbable that the progenitors of man, either the males or females or both sexes, before they had acquired the power of expressing their love in articulate language, endeavored to charm each other with musical notes and rhythm. So little is known about the use of the voice by the quadrumana during the season of love that we have hardly any means of judging whether the habit of singing was first acquired by the male or female progenitors of mankind. Women are said to possess sweeter voices than men, and as far as this serves as any guide we may infer that they first acquired musical powers to attract the other sex. But if so, this must have occurred long ago, before the progenitors of man had become sufficiently human to treat and value their women as useful slaves. The impassioned orator, bard or musician, when with his varied tones and cadences he excites strong emotions in his hearers little suspects that he uses the same means by which, at extremely remote periods, his half human ancestors aroused each other's ardent passions, during their mutual courtship and rivalry. Spencer derives modern songs from the ancient recitative or

mere monotonous "sing-song" of the early wandering poet who flattered kings and others in power by boasting of their deeds. In still ruder times "discordant noises, the beating of tom-toms and the shrill notes of reeds pleased the savage ear."⁷ Sir S. Baker remarks that "as the stomach of the Arab prefers the raw meat and reeking liver taken hot from the animal so does his ear prefer the discordant noises to all others."

Canon Kingsley in his *Hypatia* eloquently describes the beautiful sacred music heard in the temples of the heathen gods in Alexandria and elsewhere, and among the Mormons of Utah popular airs such as "Lilly Dale" were excellently sung in the great tabernacle in Salt Lake City, but to words expressing hatred and revenge. Every religion has found singing to be a good accessory means of arousing devotion. It was recorded that the Mohammedans sang and wept with joy as they dragged their cannons over the Macedonian mountains thinking that their conquest of the Greeks was the forerunner of Mohammed's prophecy that his followers should rule the world. It is a great shock to one influenced by sacred music to learn that other religions and even pagan idol worshippers make use of beautiful harmony and melody in their devotions.

While the original Hawaiian music was very monotonous and more a bumpy-time-keeping for their sacred dances, the present generation of natives sing as well as Europeans and their love songs are peculiarly pathetic and are much admired.

Professor Ensel of the Music Teachers Association is responsible for the statement that when the army of the first Napoleon was in Egypt in 1799 the camp for awhile was near the pyramids. One afternoon about sunset the band was playing. The inhabitants of the desert had collected near and were listening to the music. Nothing unusual happened until the band struck up "*Malbrook s'en va t'en guerre*," better known to English speaking people as "We won't go home till morning." Instantly there was the wildest joy among the Bedouins. They embraced each other and shouted and danced in delirious pleasure. The reason was that they were listening to the favorite and oldest tune of their people. Professor Ensel said that the tune had been taken

⁷ Darwin, *Descent of Man*, Ch. XIII, Vol. II.

from Africa to Europe in the thirteenth century by the crusaders and had lived separately in both countries for six hundred years. It had been in France years before Marlborough was playing havoc with French soldiery in Malplaquet, Blenheim and Ramillies in Queen Anne's time. Malbrook was the nearest approach to the pronunciation of Marlborough. "There is a happy land far far away" are the words adapted to an ancient Hindoo national air, the accent being on the first note of each bar, an archaic method adjusted to timbrel rattling and the jingling of the anklets. Even today children unconsciously copy this in starting each line with loud stress on the first words. This adaptation of music of the "enemy" by preachers is quite an old story. It was Charles Wesley who said that he could not understand why the devil should have all the good music and thereupon put many of his brother John's hymns and his own to the popular songs of the day. The experiment was successful and this capture of well known song tunes was the beginning of that congregational singing characteristic of the methodist church. Moody and Sankey followed in Wesley's footsteps. Missionaries to the Hawaiian Islands adapted native words to old English hymn tunes so that Hawaiian music is merely New England hymns.

It is well known that the piano evolved from the harp but it is not so well known that the bag-pipe (*utricularius*) was known in the time of Nero. Some musicians claim that the highest music is represented by Beethoven's sonata. An instance of pre-human music is afforded by the time marking thumping by the chimpanzee on his drum of clay. An evidence of the love-making intention of musical cultivation lies in the fact that so many good piano players among women abandon their music altogether after marriage. R. E. C. Stearns^{*} experimented upon animals with music with the result of the discovery that among those who love music may be included pigeons, hares, seals, hippopotami, squirrels, mice, pigs, sheep, goats, oxen, cows. Cats try to get as near your mouth as possible to ascertain the source of the whistling or singing. Some are made uneasy but others evidently relish music. Of course birds are attracted by music. The wolf, hyena and dog are frightened by music while the alligator appeared to be indif-

^{*} American Naturalist, Feb. and March, 1890.

ferent to it. Others have observed that some dogs did not object to piano playing but howled dismally when a cornet or violin was tried. Wolves can be started to howling by whistling.

Language owes its origin, in Darwin's opinion, to imitation and modifications of imitations of various natural sounds, the voices of other animals and man's own instinctive cries aided by signs and gestures. Primeval man, says Spencer, probably first used his voice in courtship singing, and by analogy this power would have been especially exerted to express various emotions as love, jealousy, triumph, and as a challenge to rivals. Imitation is strong in low races, monkeys and idiots. Man alone can associate together the most diversified sounds and ideas and this depends upon the high development of his mental powers.

Articulate language is practically confined to man but he uses inarticulate cries as do animals, aided by gestures and grimaces, especially with regard to simple feelings that are but little connected with higher intelligence. Our cries of pain, fear, surprise, anger, with appropriate actions, and the murmur of the mother to her beloved child are more expressive than words. Darwin suggests that the imitation of a growl of a beast of prey by some ape-like animal used to warn his fellows could have been the first step in language. While mind developed language the latter also reacted upon mind to develop it further especially where thoughts required words, just as calculation does figures and symbols.

Sayce thinks that the speechless man of earliest times expressed himself as the Bushmen of Australia do now by means of clicks, and the Hottentot "clop-slop-flop" language causing Hollanders to name tribes from the sounds made by their talking, further shows how there may be many different methods of speaking. Many tribes omit consonants familiar to us.

Man is born mute and depends upon teachers for language, so man existed before the use of language was known. Hensleigh Wedgwood⁹ refers to foreigners resorting to gestures when trying to make themselves understood when the language of the place is unknown, and he quotes the lines of Tom Hood:

⁹ The Origin of Language, London, 1866.

"Moo, I cried, for milk,
 If I wanted bread,
 My jaws I set a-going,
 And asked for new laid eggs .
 By clapping hands and crowing."

Müller tells of an Englishman asking his Chinese cook about some meat he had eaten: "Quack, quack?" The Chinaman replied "Bow-wow."

Garrick Mallery¹⁰ divides gesture speech into body, limb and face motions and refers to the instance of Gallaudet, the famous instructor of deaf-mutes, who by means of his facial movements, and with his arms folded, imparted the story of Brutus killing his two sons to a pupil who afterwards wrote correctly what he understood the teacher to have told by his face alone.

The gestures of young children, especially pouting, are identical with those of higher apes. The Neapolitans talk not only with their hands but with their faces, and Mallery¹¹ says there is excuse for believing that the revolt called the Sicilian Vespers, was arranged throughout the island without the use of a syllable, and even the day and hour for the massacre of the obnoxious foreigners was fixed upon by facial expression, without even manual signs. Some of the common signs Taylor cites as used in Naples are waving the hand to indicate folly, finger and thumb rubbed together mean money, squinting signifies a cheat, finger to mouth means silence, wiping perspiration from forehead expresses fatigue. Taylor speaks of King Ferdinand returning to Naples after the revolt of 1821 and finding that the boisterous people would not allow him to be heard resorted successfully to a royal address in signs, giving reproaches, threats, admonitions, pardon and dismissal to the entire satisfaction of the assembled multitude. The history of the Sicilian gesture is also given by Taylor who says that the Sicinians being its aborigines Sicily was colonized by the Greeks in separate bands who had different dialects, which became further unlike as time passed, the oligarchies or tyrants warring with one another until the fifth century, when Carthage added to the mixture, followed by Roman, Vandal, Gothic, Heru-

¹⁰ Report of Bureau of Ethnology, 1879 to 1880, p. 269.

¹¹ Ibid, p. 296.

lian, Arab and Norman subjugation. As dialects multiply so do gestures and they decrease together as the necessity for signs depart with a more general language. Addison in the *London Spectator* contended against gestures in public speaking and the English repress movements of the kind even in conversation while many other people resort to even violent and unnecessary motion while talking.

The dog gesticulates in his fawning to show submissiveness, and turns on his back to tell the big dog that he is helpless in his presence. He jumps and springs to attract attention and to show joy, and pulls clothing to draw a person away. Deaf-mutes resort to expressive motions and cultivate a sign language and when disease of the brain interferes with speech the patients sometimes resort to motions to convey meaning.

Gesture language is essentially the same all over the world, nor does it depend upon poverty of language for the Neapolitan is the richest dialect of the Italian group. Mallery quotes Clark as saying that Indians of different tribes had been married for years and had never learned a word of each other's language, their communications being by signs entirely. The plan of thought in sign language suggests primitive speech, especially isolating languages. Articles, conjunctions and prepositions are omitted in sign language and adjectives follow the verbs. All verbs are given in the present tense, and both nouns and verbs appear only in the singular number, the idea of plurality being expressed by some other way. Abbreviations are constantly practiced. To illustrate this, Capt. Clark gives the following imaginary speech: "I arrived here today to make a treaty. I have with me one hundred lodges which are camped beyond the Black Hills near the Yellowstone River. Take pity on me for I am poor and I have five children who are sick and without food. The snow is deep and the weather is very cold." The signs used to convey this would be those for the following words: "I-arrive-today - make - treaty - my - 100 - lodge - camp - beyond - Hills - Black - River - Elk - you - chief - great - to pity - I - poor - my - 5 - child - sick - food - wiped out - snow - deep - cold - strong."

The well known story of a dog who brought another dog with a broken leg to the surgeon who had cured his leg when broken

plainly proves that in some way he had told his friend what the surgeon could do for him.

A. Graham Bell, the telephone inventor, is accredited by Garrick Mallery¹² with having taught an English terrier to say distinctly, "How are you Grandmamma?" Of course the dog was unable to attach any meaning to the words, but other dogs have shown by their acts that they understood many things said to them, and it is often told of old house dogs that they disappeared when there is talk, in their presence, of destroying them.

Sometimes gesture language consists in pointing out the object thought of or picturing it in the air. An universal method of indicating a day is to point to the course of the sun in the sky by a wave of the hand from one horizon to the other.

Laura Bridgman was a deaf-mute and blind pupil of Dr. Howe of Boston, and could only be communicated with by finger motions, that she felt, and that she thought in these terms alone was evident in her moving her fingers as though she were conversing when she was dreaming. Dogs also move their limbs and bark in their dreams.

The inimitable work of Darwin on Expression of the Emotions in Man and Animals affords many facts which can with advantage be referred to in this matter of language in general. Practically when mental states are outwardly expressed by movements of any part of the body such movements may be regarded as gestures, and it matters nothing whether the will is or is not concerned, such gestures serve as communication to others, though at times that may not be intended.

Under three main principles Darwin groups this sort of language: 1. The principle of serviceable associated habit. That is, when certain movements of the body have proven to be serviceable, the movements tend to be repeated whenever the mind recalls these movements, though there may be no use in doing so. Certain states of mind are thus associated with habits of movements and the muscles concerned in the movement contract more or less according to the will power exerted in the suppression of expression, and sometimes checking one habitual motion requires

¹² Ibid, p. 275.

other slight movements, and these also are expressive. Muscles that are the least controlled by the will are most liable to act.

2. The principle of antithesis: Certain mental states leading to certain habitual acts and an opposite state of mind occurring there is a strong tendency to use motions that are the opposite of those induced by the first principle.

3. Nerve currents may cause movements other than habitual or voluntary ones.

We can group all expressions under these three heads:

When expulsive efforts are made the muscles around the eye contract to protect the blood vessels from rupture in the delicate structures there. This is serviceable but the eye may be shut sometimes to denote a mental state associated with the impulse to close it from harm. Fear when strong expresses itself in cries, in efforts to hide or escape, in palpitations and tremblings. The destructive passions are shown in tension of muscles, gnashing of teeth, protruded claws, dilated eyes and nostrils, and in growls and these are the motions of killing prey. Laughter, Spencer regards as due to an overflow of nerve force, but its origin in my opinion is in the eating motions.¹³ A dog expresses his love and humility by drooping ears, hanging lips, flexible body and wagging tail. With mankind bristling of hair, uncovering of teeth, point to man having existed in a much lower and animal-like condition. Monkeys and men use the same muscles in laughter.

Habit increases the conducting power of nerve fibres with frequency of excitement. Muscles also grow in size with use and the apparatus of motion, sensation and thinking become similarly stronger with exercise. Inheritance and habit together may not only fix but intensify certain acts such as ambling and cantering of horses, which may not be natural to them, also in the pointing and setting of dogs and peculiar flight of certain pigeons. In men there can be certain tricks of gesture also transmitted. Men learn to put on gloves and wind their watches unconsciously, they may fail to remember when they did so, but at first these acts are learned by attention. Even piano playing may be done while asleep, by one who has studied the method previously until able to play unconsciously. A rustic often scratches his head

¹³ Comparative Physiology and Psychology, 1884.

from habit when perplexed, as if he felt an uncomfortable sensation. Another rubs his eyes or coughs when embarrassed. One who rejects a proposition shuts his eyes or turns away his face, but if he accepts he will nod his head and open his eyes widely. Persons describing a horrid sight shut their eyes or shake their heads as though to escape something disagreeable. In looking suddenly at any object the eyes may be quickly and widely opened and in trying to remember you may raise your eyebrows as if trying to see better, and in recalling a name may glance at various parts of the room as though you expected the name to appear to your eyesight.

Cutting with scissors and learning to write may be associated with absurd tongue motions. When a public singer or speaker becomes hoarse you may hear a number of persons clearing their throats sympathetically. At leaping matches some spectators move their feet, and in watching various performances children and a few adults sometimes unconsciously imitate the movement they are watching. Reflex acts such as sneezing, coughing and breathing are to some extent concerned in expression. There is involuntary closure of the eyelids when the eyeball is threatened. A wink. Associated serviceable habitual movements in the lower animals are cited to show that movements originally performed for a purpose are still used from habit even though ceasing to be useful. Dogs when they wish to lie down turn round and round and scratch the ground in a senseless manner, as if they intended to trample down the grass and scoop out a hollow as their wild parents did in the woods or plains. Jackals do this but wolves do not. A half idiotic dog was observed to turn round thirteen times before going to sleep. Dogs crouch in approaching one another as their wild ancestors did in nearing their prey. Dogs, wolves and jackals scratch backward, even on a smooth surface, but if this motion was ever serviceable in their ancestry it has degenerated into a mere ceremony, looking like a superstitious observance. Cats, wolves, jackals and foxes cover up superfluous food and in these motions we have a useless remnant of habitual movements originally followed by some progenitor of the dog genus and retained for a prodigious length of time. Horses paw the ground when eager to start and also when about to be fed

corn or oats. Cats may shake their feet when they hear water poured as they do when their feet are wet. An habitual movement excited by an associated sound instead of touch. From these and other instances Darwin concludes that in accordance with the first principle when any sensation, desire, dislike, etc., has led during a long series of generations to some voluntary movement then a tendency to the performance of a similar movement will almost certainly be excited whenever the same or analogous or associated sensation, although very weak, may be excited or experienced, notwithstanding that the movements in this case may not be of the least use. Such habitual movements are often or are generally inherited, and they then differ but little from the reflex actions. The principle of Antithesis is represented in the dog when angry holding himself stiff and straight and with erect hair, and when fawning on his master the very opposite condition is assumed, he becomes curved and wiggles up and down and from side to side. The cat crouches with ears drawn back and tail swinging when angry, with back curved and hair bristled, but when pleased the back is arched and tail is erect and puss rubs herself leaning against your leg. All these movements characterize every species and variety of the dog and cat families. Dogs show instantaneous change between pleasure and dejection and are often distracted between contending desires. Dogs in play pretend to fight and bite but are careful not to do harm. The motion to be gone is an associated gesture and its antithesis is the pull toward you, and these kinds of antithetical gestures are inherited. Children are more apt to have convulsions than to tremble and among adults trembling is caused by cold, during blood poisoning, delirium tremens, old age, exhaustion, pain, fear and occasionally anger and joy. Music may produce a shiver down the back. Strong excitement of the nervous system interrupting a steady flow of nerve force to the muscles accounts for trembling. Strong emotions affecting various organs show similar outflow of energy. The heart is particularly sensitive to stimulation either physical or mental; and the vasomotor system regulating blushing and pallor is also responsive unless habit has regulated or checked such exhibitions of emotion.

The fluffing of feathers and the swelling out of some animals

is to appear as formidable as possible and to frighten enemies, and for this purpose many sounds are used, but the drawing back and the pressure of the ears close to the head is to keep them from being bitten. Showing the teeth, especially the canine, is useful as a threat and survives in man in his sneer. Nodding and shaking the head is presumed to have originated in accepting and rejecting food.

The wide opening of the eyes in fear and surprise is serviceable so as to see as quickly as possible all around us and the ears may involuntarily be pricked up to enable us to hear better, for we have habitually prepared ourselves thus to discover and encounter danger. Headlong flight or struggle is prepared for by rapid heart action, dilated nostrils and heaving chest and the exhaustion may follow such preparatory conditions though the exercise was not taken, through the force of inheritance and association.

Oppressed breathing is associated with horror and the feeling of relief is expressed by a deep drawn breath, and sighing could express the attempt to physically relieve a mentally unpleasant feeling. All such expressions and vastly more are interpreted by beholders more or less correctly and are therefore classified as signs, gestures, hieroglyphics of conditions that may be read and understood, hence they are to some extent symbolic language and indeed when these motions are voluntarily performed they can be made to convey ideas of fear, disgust, pleasure, etc., as effectually as writing or speech.

That facial expression is an underestimated part of conversation observe how closely some watch each others faces to tell whether the speaker is in earnest and to learn meanings from the expression as well as from the words. Speaking in the dark loses much of the help of face appearance and other movements as accessories to speech.

Wyllie gives a diagram of development of speech in the child. The first year tears and crying are the main emotional expressions, while grunting, laughing and smiling increase with facial expression and gestures, babbling and crowing. The second year crying decreases and grunting ceases, babbling and crying grow less, and words are freely invented, mimicry and echo-

lalia grow and the understanding of spoken words increases. The third year crying is much less, laughing, smiling, facial expression, gestures are more frequent, the understanding of words spoken increases and intelligent speech production which begins usually about the middle of the second year has now greatly improved. Words are less invented at this age than earlier; babbling, crowing cease, mimic acting and echolalia decrease. So at first there predominates inarticulate sounds, next facial and other gestures, then babbling, crowing; then intelligent speech.

W. H. Bates¹⁴ says that seven or eight languages may be spoken within two hundred miles of the river by Brazilian tribes. Indian languages may become quickly corrupted by their tendency to invent slang which amuses them and may be adopted. A few years of separation of parts of tribes render their languages unlike.

A child says "I comed," "I goed," "badder," "baddest." Children conjugate irregular verbs in a regular manner.

The remarkable peculiarity has been observed in several widely separate peoples, as in the Carribean Sea and in Greenland, of a language spoken only by the males and another language by the females of a tribe. This strange custom is accounted for by Hervas¹⁵ quoted by Max Müller¹⁶ who says that "the Carib women of the Antilles spoke a language different from their husbands because the Caribs had killed the whole male population of the Avawakes and married their women, and something similar seems to have taken place among some of the tribes of Greenland."

W. D. Whitney remarked that spoken language began when a cry of pain was imitated to indicate that "I am suffering," and when an angry growl, the direct expression of passion, was reproduced to signify disapprobation, threatening, and the like.

Wilhelm von Humbolt clearly laid down the principle that copious vocabularies are not a proof of excellence any more than a copious gabbling is proof of intellect. In Tierra del Fuego there are vast numbers of words to express silly differences of

¹⁴ The Naturalist on the Amazon.

¹⁵ Hervas, *Catologo*, I, p. 369.

¹⁶ Science of Language, p. 48.

one idea and the Eskimo have twenty words to signify fishing for particular kinds of animals but have no word "to fish" in general. Regularity of structure or abundance of grammatical forms does not confer high rank on a language for both traits are common in low degenerate tongues. Regular verbs with one conjugation indicate isolation and poverty of ideas because other people have transmitted nothing through contact. Irregular verbs come from assimilation with other tongues.

Language being a natural faculty is capable of constant improvement and has advanced steadily. Slang sometimes survives when all else perished in a language and by dropping the unnecessary the necessary survives. Chinese is fixed and decaying while English is growing, absorbing, living.

Max Müller¹⁷ says that "As soon as man began to observe, to name and to know the movements and changes in the world around him, he suspected that there was something behind what he saw, that there must be an agent for every action, a mover for every movement. Instead of saying and thinking as we do today, the rain, the thunder, the moon, he said the thunderer, the rainer, the measurer, he rains, he thunders, without caring as yet as to who he might be. His earliest concepts consisted in the consciousness of his own repeated acts. The act and the actor, the movement and the mover were expressed by the same word. All such words as oration, pension, picture, were names of acts before they became names of objects. After a time no doubt the human mind accustomed itself to look upon the actions as independent of the agents, the cutter became a ship, the cutting became a slice, the writing became a book. But the chain from the active root to the passive nouns was never broken and every link is there to attest the continuous progress of human language and thought. The most prominent phenomena of nature were named by the Aryas as in the instance of naming the storm wind 'the smasher' Mar-ut, the smasher, from Mar to smash, indicating the god of the storm wind as the one who smashes."

The same process of naming the most prominent phenomena of nature led in the end to a complete physical pantheon. Not only trees, mountains and rivers were named as agents but the

¹⁷ Anthropological Religion, Lecture III, p. 71.

sea and the earth, the fire, wind, sky, stars, sun, dawn, moon, day and night were all represented under different names as agents. When no others than human agents were known other agents were conceived as like human agents. Next the agent or power was spoken of as more than human, superhuman. Then came a recognition of the animate from inanimate. There was supposed to be a power behind actions. The history of the word *deva* in Sanskrit, and *deus* in Latin explains the conception of deity among the Aryan ancestors better than anything. The highest generalizations were that there was but one god.

Silly words to emotional songs are popular as the intelligence is not bothered with trying to get at any meaning. Songs which are outbursts of feeling are more sure to elicit response of the audience than when intelligible words are used. So the *prima-donna* whose language is not known by the audience is most popular, according to Noire. The chants of rude nations are inarticulate words. Indians in America accompany their dances with *Hi-ya—Hi-ya*, monotonously repeated to a limited range of notes. There is no more meaning to such words than there is to baby talk.

Tyler says that in South America a bird with a large nose was called the *tou-can*, or big beak, and the name was also transferred to Indians who had big noses, and in this way words may grow and change in use. Our word *aquiline* is used to mean a curved nose like that of the eagle.

Hammer was in the old German *hamar*, which in Sanscrit means stone, and stone hammers were the first to be used. A surprisingly direct proof of the Aryan derivation of English and German.

The roots from which most words are constructed are not numerous. There are less than two thousand in Sanscrit, only five hundred in Hebrew and four hundred and fifty in Chinese, and still less in some other languages.¹⁸ Sir John Lubbock found *pa* and *ma* primitive and universal. The devices for increasing the power and range of language consist in intonation, reduplication, combining old words and making new words. *Ta* has twenty-six different meanings in Chinese and hence the

¹⁸ Max Müller, *ibid*.

chance that it will coincide with some meaning of the sound of *ta* in other languages is twenty-six times greater than with many other words.

Max Müller grudgingly admits the truth of onomatopœia, which he dubbed formerly the bow-wow theory, these natural sounds suggesting the names that are readily recognized, such as bow-wow, cackle, cluck, gobble, quack, caw, croak, neigh, whinny, bray, bark, yelp, howl, snarl, purr, mew, grunt, roar, bellow, low, bleat, chirp, chatter. The hog was named from the imitation of the sound the animal made. The English cock is a contraction of cock-a-doodle-doo. The English owl is *Eule* in German, *ulula* in Latin, *ulu* in Hindu and *mulek* in Egyptian.

Words that imitate the sounds of nature are classed as onomatopœic, as when a bird or other animal is named by imitating its cry, as hawk represents not only the noise this chicken thief makes but the name of the chicken's shriek to announce its approach. So hens and people name the hawk *aiike*. Other natural sounds are those of the wind, the roaring of the waterfall, drip and patter of the rain and from the sounds made the names become associated. These sounds do not impress the senses of all alike but sometimes so nearly so that they are suspected of having been borrowed from other languages when they originated separately as coincidences.

Calling the sheep "*ba*," and naming the dog from his bark was called the bow-wow theory by Max Müller and while he was right as rejecting it as an explanation of all naming of objects, he went too far in rejecting it altogether, and compromised by adopting the onomatopœic theory which means the same thing. Deriving language from interjection, the necessity for exclaiming or giving vent to emotion by sounds, such as neighing, crowing, roaring, Müller calls the "*pooh-pooh*" theory. Müller's own theory was that every being was created with a typical sound to enable man to have a copious phonetic world. This was in accord with the old fashioned idea that every thing was made with a definite purpose and Müller's critics called his notion the "*ding-dong*" theory. This is part of the notion that such vast bodies as the stars were created for astrological use in determining the

births and deaths of men, as we can imagine the rat thinking that the entire house and cellar contents were made for him only.

Interjections such as ah, ha-ha, hum, ugh, tut, pooh, are derived from involuntary expressions. Bang, in imitation of the bang of a gun, becomes a verb to "bang the door." Slam is another verb derived from the noise made. Children universally try to imitate natural sounds and learn by mimicry of older persons. Several nations use the word hist for silence. Hust and whist and the Gaelic wist are also common. The German has pst, the Danish tys, Swedish tyst, French, chut, Italian zitto. The English use mum as a caution that the mouth should be closed. Sh is said with lifted finger. Delight is indicated by smacking the lips, or rubbing the belly, and Mallery speaks of the slang yum-yum being used to denote fondness, and the Papuans call eating nam-nam. Such words as biting, gnawing, grinning, smearing, belong to the second stage of language evolution and are not starting points.

The natural expressions of the emotions, the inarticulate cries of pain or pleasure, fright, suspicion or admiration are not exactly the same in all languages, but being often based upon similar vowel sounds the articulate words from them are liable to be nearly alike. The ah sound, also, prevails in such often used words as papa, mamma, father, which are quite similar in different languages. But there are also mere coincidences which other things prove to be such and that there were no associations of languages in such cases as when the Maya Indians of Yucatan used the word hol for our hole, poll for head and even battel for battle. These are all assumed to be accidental.

As resemblances were constantly being seen where they did not exist and as differences were also mistaken where resemblances should have been noted, the naming process of applying a term for a group of similar objects was a confused one, such as calling all trees firs, and some trees oaks, and finally mistaking oaks for firs until in some places such changed names exist today. Time and cutting off changed many words by survival of the fittest word to exist, which was often far from being the best, as in other instances of natural selection. The essence of language says Wedgwood, is a system of vocal signs. The mental

process of speech is the same as by gestures such as the deaf and dumb employ. A nod or the shake of the head is the same as yes and no. The gesture is addressed to sight and the words to hearing. Deaf persons are mutes if they have never heard speech, those who have become deaf after having previously spoken preserve their speaking faculty but fail to modulate their voices correctly. The case of Casper Hauser is cited to show that even when hearing and intellect are intact speech may not develop when it is not permitted to be heard. Noire's¹⁹ conception is that man, like the ape and others, very early acquired a language of gestures or attitude, and of gestures accompanied by sounds. Savages accompany their speech with gestures. Noire notes three kinds of sounds such as: 1. Calls of allurement or summons. 2. War cries to dismay and to assemble. 3. Warning calls among social animals. In these are the subsoil of human speech.

Human speech was a series of cries, each a sentence in itself without syntax and limited to the simplest of animal wants. They are not the same in all languages nor are they numerous, but by a series of remarkable devices, which are never the same in two different tongues, nations have built upon these roots all the structure of vocal expression whether stately or cumbrous. Words may have different meanings in different tribes and words may be borrowed from another race, retaining or altering their original sense. In English the borrowed words are from the widest different sources and make up the bulk of the language. Languages are constantly altering, whatever the status of the people, either by advance or degeneration. Only dead languages stand still.

Hutson²⁰ says that speech began in the necessities and gratification of man's association with his fellow man. No doubt by far the original vocabulary found in any family or tribe sprang directly from mimicry of natural sounds heard from the immediate environment. Hence there is a measure of truth in all the theories in the part origin of speech being based on sound. There is sense in what has been ridiculed as the "ding-dong" theory, also

¹⁹ *Die Welt als Entwicklung des Geistes*, Ludwig Noire, Ch. IX, part III, Leipsic.

²⁰ Charles Woodward Hutson, *The Story of Language*, 1897.

in the "pooh pooh" theory. The ring of metals, the clash of weapons, the cry of animals, the song of birds, the whistling of the wind, the spontaneous ejaculation of man himself had all their share in the formation of primitive languages.

Among animals we note the sign, the sound and the intonation, or louder sound. These have developed into human gestures, human speech and human emphasis. In the Chinese language intonation is as important as mere sound. Mimicry is unquestionably the primary basis on which all these modes are formed, and diversity of surroundings and anatomical differences make language diversity. According to Henry Drummond, language consists in six elements.

1. Emotional exclamation or gesture sounds.
2. Imitative sounds.
3. Conventional symbolic sounds.
4. Varied combinations of these in articulate speech.
5. Figurative use of concrete terms to express abstract ideas and,
6. Grammatical corrections, late in development.

The first sounds were probably made up of the closest consonants and most open vowels and confined to merely physical concepts. All intellectual and moral ideas found expression by means of the figurative use of words that had originally a physical meaning only.

The necessity of communication originated language. It also facilitates thought, but this had little to do with its origin. Diplomats claim that by means of language they are as often enabled to conceal thought as well as to communicate it.

Food, drink, shelter, protection against dangerous animals, and the care of helpless offspring were man's first needs. For these intercourse and community of action were needed. Gesture, posture, grimace and utterance were necessarily the earliest modes of communication and probably long continued in use together, and still are used with other modes. There are said to be tribes that cannot understand one another's language in the dark. Cries, exclamations, and imitations of the sounds in nature must have made up the first modes of utterance. These would soon become fixed in meaning and make the beginning of speech.

The Aryan tongues have been traced back to roots of one syllable. The Chinese and some other tongues still consist of such roots.

As among the Ponca and other tribes of Indians, there is a tendency to multiply uselessly such things as a verb that would denote whether game were killed accidentally or purposely, by shooting or otherwise, and whether by bow and arrow or gun; the form of the verb would also express the person, number, gender and case of the object. This gives a clew to the crude origin of speech in making a word that was used upon one occasion that would exactly express the whole of a certain event. As exactly the same kind of event might happen but once in a million times, there would be a useless cumbering of the memory in the storing up of such words. Advance would consist in inventing words that would avoid all this difficulty.

Savages invent names for not only near but distant relations such as the cousin of the wife's mother's aunt, often a single word is sought for to express such relationship, and with the inevitable result of overcharging the memory with useless terms. This is paralleled by their inclination to give separate names to multitudes of acts that are nearly alike, hence their jargons have to undergo pruning by the natural selection of such terms as can be better remembered with the additional grouping of names by acts and things that appear to resemble one another.

In some tribes every river, tree, hill, deed or sound would be named if possible, and where rivers, trees, hills, are scarce this might be done, but when a change of location occurs to a place where trees, rivers and hills are many there is likely to grow up names for groups of objects, the abstractions of "a river," or "the hill," etc. Children also invent languages and then forget them, and demented persons do the same. "The Tasmanian has no general terms, the New Caledonian is unable to understand such primary ideas as 'tomorrow' and 'yesterday,' and the speechless child has not yet reached the level of intelligence of the dog or elephant."²¹ Swearing is merely a survival of the growling of the beasts to intimidate enemies or overcome prey, so that oaths have an instinctive origin and the ability to swear, after a brain

²¹ Sayce, *The Primitive Home of the Aryans*.

injury has sometimes destroyed all other means of expression, shows how deeply rooted is this growling or threatening propensity in the organic structure of the brain.

Pollock²² regards the first sound of the infant, "m-m," often repeated, generally indicates that the child wants something. "Ba-ba" repeated indefinitely is a general demonstrative standing for any object, as himself, another, and so on. The expulsive labial "ba" seems to point out an object with the lips, the "m-m" points within as in sucking. In the baby evolution of speech words are first vaguely uttered without definite meaning, and finally with definite meaning as "mamma," "papa," "dada," etc.

To illustrate how those of the old metaphysical school could fail in noting facts and drawing inferences, Adam Smith, Condillac and Locke say that a child calls every man papa or every young man "Charley," or something similar, hence proper names were the first names, and Liebnitz says that general terms were the first words, as children call every person man, and use frequently such words as thin, plant, animal. Noire is correct in combatting this with the fact that the child is limited to a few sounds and a limited sensory impression, neither special nor general names are attempted, but sounds, as with the savage, associated with a few recurring impressions, and whether they may later acquire a special or general meaning, as a concrete or abstract expression, the mere sound at first attaches to a certain recollection and subsequently may be made to include only one or very many objects. As Noire puts it, the child's activity is at first one of connecting matters that often occur with some one word that is at his disposal, only later does it learn to classify and subdivide, as when it hears that this is a river, and that is a river, etc. Language designated by its first words those objects that were the most striking and the most interesting to man, and proceeded then by the help of those words to generalize, that is, to attach similar words to similar things. The marked importance of some object which constantly occurred in some particular isolated form naturally must have led to attaching a particular name to the object, so proper names belong to the oldest words of humanity. The roots from which the words of today have risen

²² Popular Science Monthly, XIII, p. 588.

originally denoted definite acts. But considering the changes constantly undergone by words, these roots need not have the same meaning as at first. Personal things of frequent recurrence are fixed in words by the child, transient acts make the child cry or laugh instead of speak. The names of individuals were the earliest words, and this is how man is able to fix the particular and to raise it to the general concept.

Germany, like France, has a linguistic division in low German in the lands north of the cross line, high German south of it. Holland uses a Flemish form of low German. Belgium is divided between the Flemish and Walloon. The German of Switzerland is encroached upon by French and Italian. Denmark, Norway and Sweden are peopled by Scandinavian branches of the Germanic race. Only in the north is the non-Aryan race called the Lapps.

Latin, in the course of time, changed into Italian, Spanish, Portuguese, Provençal, French, Wallachian and Roumansch, and Latin again with Greek, Celtic, Teutonic and Slavonic languages together, and with the ancient dialects of India and Persia all must have sprung from the Aryan or Indo-European family of speech.

Hebrew, Arabic and Syriac are but impressions of one common type of Semitic origin. Müller thinks the Aryan and Semitic are the only families of speech. Add to these Turanian dialects of the nomad races of Central and North Asia, the Tungusic Mongolic, Turkic, Samoyedic, and Finnic, and a convergence is shown to one common source according to Müller, but other philologists see support for the polyphyletic origin of languages in the radical differences of these families, the Aryan, Semitic and Turanian. The Aryan languages are: I. Hindu: composed by the dead Sanscrit, the Hindu and Cingalese of Ceylon; II. Iranian: the dead Zend and the Persian; III. Celtic: Welsh, Irish, Gaelic and Manx; IV. Italic: dead Latin, Italian, French, Spanish, Portuguese; V. Hellenic: dead ancient Greek and modern Greek; VI. Teutonic: English, Dutch, Frisian, classed as low German, Scandinavian languages, Icelandic, Swedish, Danish, Norwegian, while modern German has developed from the ancient

Teutonic; VII. Slavonic is divided into Russian, Polish and Bohemian.

Naus, a ship, is common to both Sanscrit and Greek, whence the word nautical. Equus in Latin is pronounced like aswas of Sanscrit both words meaning horse.

The names India and Hindu are from the Sanscrit Sindu (river), the country of the seven rivers. The Persians changed s into h, as they did in all cases, and the word became Hindu, which the Greeks adopted, but dropped the h and passed it to the Romans as India.

Accident may pass a phrase into general use. When Benjamin Franklin in Paris heard of General Washington's retreat in 1776, he exclaimed, "Ca ira," or "all will come right in the end," and later in the French revolution it became part of the words of a song, and still later Ca ira was the name of a French battleship.

The language of the law among English speaking people is mainly Norman-French, and the court crier who opens court with "Oh yes," may not know that it is a corruption of Oyez, which in some cases has been changed to its English equivalent, by order of the judge, into "Hear ye."

As an example of survivals of languages, Canadian French is eighteenth century French, and the language spoken by the mountaineers of Kentucky, Tennessee and Virginia is that of England of three hundred years ago, a dialect of which many words were in use in Chaucer's day, and the ideas of these primitive people are in many cases like those of such very old English times. The Irish dialect is essentially the pronunciation of old-time English, when the vowels had the continental value mixed with some more modern English sounds.

English itself is a mixture of the ancient continentally pronounced words with dialect corruptions, which account for the varying pronunciations of vowels, as a in father and rather, and its neglect in tear and fear, etc.

Dumb animals cannot be denied thought; they do not even analyze consciously their impressions, yet they study conditions to advantage, make up their minds to act offensively or defensively without a word; the infant does pretty much the same; so do the deaf and dumb. So logic does not depend upon words,

as Mill claimed; on the contrary logical inferences may be vastly nearer the truth before words are used. Hobbs stated, "truth and falsity have no place among such living creatures as do not use speech." Of course he would regard man alone as the speaking animal. The fox and wolf resort to subterfuges, and dogs and cats know that playing is not in earnest.

Addison knew his inability to converse, though a great writer. Said he, "I have nine pence in my pocket, but I can write you a check for a thousand pounds." Garrick said of Goldsmith, "He writes like an angel and talks like poor poll."

It is a pernicious idea, suggested by Max Müller, that ideas depend upon words. The superiority of the modern method of object teaching disproves it, for the senses may know a thing better, you may understand objects better by seeing, feeling, etc., rather than by description.

Words may indicate things, but first and foremost you must understand what these things are, what the words mean, showing that understanding precedes words. Then, again, a man may think one thing and say another.

We read facial expression unconsciously, the play of the muscles of the face in smiles, sadness, animation we interpret without analysis, without resolving each appearance into its composite units, and so we read faces as we would hieroglyphs, each entire expression stands for itself, nor do we say to ourselves this indicates grief, this joy, for the interpretation is swifter than words, and so words are not in such cases needed for thought. As in the case of Gambetta, thinking could be facilitated by speaking, and it often occurs with others that the act of speaking appears to bring a flow of ideas, sometimes writing does the same thing, and excitement may also increase the ability to think, act or speak, though it may also confuse ideas, and those unaccustomed to writing or speaking much are not helped to think more clearly. Habit and aptitude has much to do with such matters. On the other hand, great thinkers have been reticent or had poor deliveries. Sir John Hunter could express himself with difficulty, and yet his researches added greatly to our knowledge, while the most voluble elocutionist may have an empty head. Napoleon regarded orators as mere manufacturers of phrases. Cuyler asks

what is eloquence but truth in earnest? Or its semblance, might have been added, for one can be as earnest in lying as in truth teaching, or may be energetically mistaken.

One may prate of things glibly and be unable to apply the words practically. A parrot-like repetition of the contents of a book may be associated with utter inability to understand the subject memorized. Words are often learned and meaning often neglected, as when songs and phrases in a foreign tongue are committed to memory. My German teacher believed that God made languages. A frightful charge against the deity.

Müller says that "if you wish to assert that language has various beginnings you must prove it impossible it could have had a common origin." Ignoring the bad logic in the remark, we can reply that while Aryan, Semitic and Turanian families have sufficient unlikeness to warrant the idea of separate origin of these tongues from which the others descended, and as for coincidences in evolution, like causes producing like effects, could enable independent development, and in exclamations and emotional language generally similar organs and environment is likely to produce similar conditions as to gestures, grimaces and a few words. But while all Aryan languages had a similar origin, the Semitic and Turanian are not traceable to any Aryan origin. As evidence that language is not necessarily race, Hutson cites the fact that Jews speak all languages but the original Hebrew.

Hutson²³ says language began with positional grammar. Just as children put two or three words together, so races use the full sentence structure. The relation of words to each other may be expressed by position, by intonation, by inflection and by connectives. In a few tongues positional grammar alone prevails. Chinese use both position and intonation. In that language *ta* means great, greatness, or to grow, or very much, or very, according to its position. One word may also determine the precise meaning of another. In Chinese *jin* means man, and *tu* crowd, so *jin-tu* is a crowd of men. The next step was for the determinative to undergo phonetic decay and become a mere suffix. Thus in Burmese the plural is formed by *to* and in Finnish by *t*.

²³ Hutson, *Op. Cit.*

Some tongues showed a preference for prefixes. The vowel inflection of the Semitic is another step, the interior change of a word to denote meanings. Next came mixture of words with lost identity, broken into short forms. This originated in external inflection and characterizes the Aryan languages. The next step was the gradual wearing away or abandonment of inflections and the use in their places of similar connections on which stress is to be laid, but which act as stepping stones from idea to idea. Many languages show partial advance in several of these directions and are not bound to any particular system, though one system may predominate.

Multiple declensions, conjugations and irregular verbs are due to the mixture of inflections of several languages. Philologists now admit that conjugations, declensions, etc., originally existed as distinct words that have since then become joined together. Languages that are most symmetrical and complex are lower than irregular, abbreviated and bastardized languages, through the fusion of various conquered, conquering or immigrant races. Whitney²⁴ holds that conjunctions are as a class the words of latest development in a language.

Tasman spoke of the Australian aborigines as a malicious and miserable race of savages in 1642, and the North Australian language upon being recorded was regarded as "refined." The verb presents a variety of conjugations expressing nearly all the words and terms of the Greek. There is a dual as well as a plural form in the declension of verbs, nouns, pronouns and adjectives. The distinction of genders is not marked; adverbs are declined by terminational inflections. There are four words for the elementary numbers 1, 2, 3, but four is two-two, five is two-three, etc.; they have no idea of decimals, and have a great many dialects. The Australian savage language is regular and simple, in keeping with its poverty of ideas. The Spanish language is probably the most beautiful, resonant, inflexible of any of Latin descent. But what is there in the Spanish language? The inquisition in destroying thousands of thinkers in Spain, both male and female, helped to fix and impoverish Spanish tongues and brains.

Language has too often deranged thought, introduced confu-

²⁴ German Grammar, p. 174.

sion where the deaf and dumb have thought more clearly. Berkeley said that words were often impediments to thought. In many cases they convey wrong impressions, may be false symbols, or may choke intellectual processes by their inadequacy. Huxley taught that, owing to so many misnomers in botany and zoölogy, the sooner you forgot the original derivation of many names the better. Attaching importance to the superficial indications of a name in science has repeatedly misled where later knowledge shows that the original application of the name was a mistake. Lord Bacon remarked that "words mightily entangle and pervert the judgment."

The gradual changes incurred by words in the course of their evolution may cause their origin to be lost, as when a dialect mispronounces a word, differently from what it is spelled, another dialect change occurs and a few such mutations make a word wholly unlike its original.

The Cherokees use vowel sounds in words that do not require the mouth to be closed, but in such words as Chicamauga, Chikahominy, death or blood is indicated, so that with labials in which the mouth is closed in forming a word there is a somber meaning in their language. This is equivalent to affirmatives in many languages being formed by open-mouthed words, as yes, yea, aye, oui, while non, nay, nein are lingual and dental.

There are old words which survive with restricted meanings, for instance, in old English luke meant warm, but the two words joined have passed into use as "luke-warm," and seldom mean other than moderately warm water, neither cold or hot.

Buffetier becomes corrupted into beef eater, as a name for the guards of the London Tower, and Max Müller notes that many old tavern signs contributed to corruption. A sign board was originally a picture of a plume of feathers, and became, when spelled on a later sign "plum and feathers." A St. Catherine's wheel became a cat and wheel. The Boulogne gate became known as Bull and gate, "God encompasseth us" was turned into goat and compasses.

The Yankton and Sisseton tribes of the Sioux nation were put upon separate reservations and after ten years dialect differences were noted in one tribe having changed m to n in many words,

as words like the Spanish *Don* differ from the Portuguese *Dom*. The Phrygians, a cross between ancient Aryans and Greeks, changed *m* into *n* in their word terminations.

Curfew is a corrupted contraction of cover fire. According to Rawlinson²⁵ the names Europe and Asia signify west and east, they were Semitic terms passed to the Greeks through the Phœnicians.

Sunday is from the Saxon *Sunna doeg*, also *Sun's doeg*, corresponding to the Hebrew *Shabbath*.

Monday is Saxon *Monan doeg*, or Moon's day. *Monath* was new moon.

Tuesday, *Tuisco* the German *Tuisto*, the son of *Terra*, the earth. In some dialects *Dings dag* or things day, to plead, attempt, cheapen.

Wednesday, from *Woden* or *Odin*, the *Hercules* or War god.

Thursday from *Thor*, the thunderer, the god of storms.

Friday from *Friga*, the *Venus*, and the most revered of goddesses of the Danes and Saxons, the wife of *Woden* and the mother of *Thor*.

Saturday, *Seater*, as *Saturn* represents time.

The ancient Saxons, like the American Indians, named people after animals. *Hengist* and *Horsa* mean horse in old Saxon.

Tartar is a general name for general tribes in Asia.

Thing, *tinga*, to speak, originated *Thingvalla*, *Althing*, the judicial and legislative assembly of Northmen.

Max Müller accounts for the changes of tree names between certain Aryan countries by migrations of people from a country of fir trees, to another region abounding in oak trees, which they called by the original name *fir*, and later beeches only being seen, the name *fir* was still used to name them, so that *fir* practically meant any kind of a tree. Scotch *fir* is found at the bottom of peat-bogs in Denmark, and above this layer are found the common oak, then alder, birch and hazel, the beech succeeds the oak. The particular prevailing kind of tree was superseded in the course of ages and the name of the first kind of trees may be transferred to the succeeding kind. The English word *fir* and the

²⁵ Notes to Herodotus, Vol. 3, p. 33.

German *Fohre* is *quercus* in Latin, which, traced to Anglo-Saxon is *furh*, in old high German it is *forakah* (*Pinus sylvestris*). But in Lombard *fereha* is mentioned as the name of oak, and Grimm gives *ferch* as oak, blood, life. The Sanskrit *dru* means wood. Gothic *trieu* tree, used in Greek as oak *druys*. The Irish *darach*, Welsh *derw*, mean oak and oak only.²⁶ So fir came to mean oak and another word meaning oak was transferred to beech by the change of vegetation in those early days. Sayce²⁷ says that the same word signifying oak in Greek means beech in Latin.

Phonetic corruption wholly changes a language as *vingt* contains the remains of *deux* and *dix*, and twenty is from the Gothic *tvai*, *tigjus* (two decades), the Anglo-Saxon *tuêntig*, framed from Teutonic materials. The Latin *viginti* was derived from the Sanskrit *vinsati*. Phonetic corruption is seen in such instances as the Bohemian *tsi*, as pronounced, spelled as *dci*, being the remains of Sanskrit *duhitar*, daughter, which means the milker, so the duty of the female Aryan child was to care for the cows. In *aujourd'hui* (French for today) we have the Latin word *dies* twice as *ajour* and *hodie* corrupted into *d'hui*. This appears like a French dialect word with an appended Latin dialect translation, similar to the combination luke-warm. *Pater* in Armenia is *hayr*. Compare the English tear with the French *larme*. Early forms were *taer*, *tehr*, *teher*, *tæher*, to the Gothic *tagr*. The Anglo-Saxon *tæher* takes us to *dakry* in Greek and (*d*)*asru* in Sanskrit. The French *larme* is traceable to the Latin *lacruma*, but are *lacruma* and *dákry* cognate terms? The Greek *dákry* and Latin *lacru* differ only in initials and both are derived from *dak*, to bite. Tooth in Sanskrit is *dat*. Latin *dens*, Gothic *tanthus*, English *tooth*, Modern German *zahu*, Greek *odóntes*, and Latin *dentes*, were varieties of edontes and edentes, the eaters.

The final introduction of the verbs to be and to have, according to Adam Smith,²⁸ enabled mankind to relieve their memories and thus unconsciously to simplify grammar. "To be" is the

²⁶ Grimm, *Worterbuch*, S. V. Eiche. Max Müller's *Science of Language*, Appendix, p. 239.

²⁷ Sayce, *The Primitive Home of the Aryans*, p. 477.

²⁸ *Moral Sentiments*, Vol. IV, p. 426.

most abstract and metaphysical of all the verbs. "The complexity of the North American language is due to the absence of the verb 'to be.'"²⁹

There were multitudes of dialects in England until after the Elizabethan age, when great authors appeared and fixed the language to some extent. English spelling was unaltered long after the spoken word had become different from its original pronunciation. The orthography of our time is very different from that of Shakespeare's age, and the pronunciation is very different.³⁰

French is curious in being inflected in written, and uninflected in spoken, speech, as the learned recorded language advanced and the unlearned common speech is largely pronounced as it was originally without inflections, and even controls the pronunciation of the written speech.

Changes of languages are explained by Müller to have made alterations in the names applied to the constellations of stars in the north, known as the dipper. Originally it was called the seven sages. Similarly the Jornada del Muerte, or Journey of Death, a sandy New Mexican waste, was contracted and corrupted into "Horn alley," and supposed to have obtained its name from the cattle horns so abundant in that desert, whereas it was the traveler's mistaken pronunciation of Jornada which sounded to them like Horalley. Also the famous rotten row of London, like Unter den Linden of Berlin, is the fashionable and royal road, and is reduced from the original route du roi.

Ivar Aasen has tried to unite the hundreds of dialects of Norway in a new language being related as a denominator to the dialects as numerators. This artificial language has been legalized by the storting and is taught in the Christiania University. It is making inroads upon the Dano-Norwegian official language.

Old-fashioned pronunciation was Roome, chaney, laelock and goold, for Rome, china, lilac and gold, and courteous old gentlemen are obleeged instead of obliged, and hand book, an old Saxon word, is lately being used instead of manual.

Of English one-half of the words in use are Teutonic, of the

²⁹ Gallatin's Transac, Am. Antiq. Soc., Vol. II, p. 176.

³⁰ Origin and History of the English Language, p. 194, G. P. Marsh, 1892.

remaining half four-fifths are from the Latin, and the rest from other tongues.

What makes it likely that iron was not known previous to the separation of the Aryan nations, is the fact that its names vary in every one of its languages, but there is a name for copper which is shared by Latin and Teutonic languages, *aes aeris*, Gothic *ais*, old high German *êr*, modern German *er-z*, Anglo-Saxon *ar*, English *ore*. Like *chalkos* of Greece, which originally meant copper but came to mean metal in general, bronze or brass, the Latin *aes* also changed from the former to the latter meaning, the same occurred in the Teutonic language.

Max Müller regards language as the most important means of determining races apart, though he acknowledges that it has its limitations, owing to the intermingling of people great enough in any age, and more so in the present. Occasionally both the language and civilization of one race have been merged into that of another. It affords a working basis from which races can be studied, and he places physical and exterior features in a subordinate relation, such as height, color, diversity of habit, etc. It is puzzling to find the word *Arya* with different meanings attached, but it is likely that the word was used, as nearly every race used its name, to indicate its superiority over all other people. Each tribe fancied itself the only real people, as the Eskimo called themselves Inuit, the people. According to Müller *Arya* means language, and the people or the language would naturally be the proud title they would arrogate to themselves and their tongue. But we find them also spoken of as the ploughmen; this must have been a much later name for Aryans, because they were known as Aryans before they became ploughmen, and when they were herders of cattle and sheep. A name probably given by neighboring tribes. The other interpretation of noble, can readily be explained as the Sanskrit indication for good family, because the Aryans were the ruling classes in India, the highest caste, and the names of the people indicated their relative position just as Manchu does in China today.

Each language tends to split into the common and the learned divisions. Latin divided thus about the time of the second Punic war, when the nation divided into the lettered and the unlettered.

Dialects may grow into languages and some of these may change into dialects just as tribes cohere into nations and may later split up into tribes, and as varieties form species and finally families, and genera may degenerate, and some languages may undergo arrested development.

Müller tells of a missionary in Central America writing down the language of seven tribes, compiling a dictionary of all the words he could hear. Returning to the same regions after ten years, the dictionary was found to have become antiquated and useless. Old words had sunk and new words had risen, and the language had radically changed. American Indians had never united in very large or permanent confederacies, and hence they have separate languages for each tribe.

Among African children language becomes corrupted so they are habituated to a speech of their own, and in one generation the entire language is changed. The father's tongue becomes that of the family and finally that of the clan, but families of the same clan may differ in speech. Class dialects spring up as those of servants, grooms, shepherds and soldiers. Even we of today do not speak at home as we do in public.

Latham says:³¹ "There are slight differences of speech between members of the same family, between villages and towns they increase, and they become greater still when there is a difference of tribe, clan or nationality. A difference of words or of pronunciation is often found among similar people. A Scotchman, Irishman and Englishman may speak the same words, but with a difference of tone or accent. When differences reach a certain point they constitute dialect, and when two forms of speech differ to the extent of mutual unintelligibility, the result is two different languages.

Natural movements of the body, including face and limbs, being read and understood by animals, the next step would be to repeat or imitate such motions intentionally, to convey a meaning to the observer; thus the horse paws to show that he is impatient to start as the dog jumps for the same purpose, and those animals look in the direction they wish to travel. Such movements contain the rudiments of means of communication of thoughts, and

³¹ Comparative Philology, R. G. Latham, London, 1863.

certainly some appreciation of means to ends and the relation of cause and effect must exist to enable this step to be taken, imitation for a purpose. The brain parts involved in all this would be that for recording sight impressions, and the limb and other movement centers with any possible intellect center in addition. If the impelling motive is for food or sexual, the corresponding parts of the brain would undoubtedly be exercised in the voluntary exhibitions of this finally decided upon expression or gesture-talk. Following this came a developed gesticulation which man exhibits in its highest, and which the pointer and setter dogs possess in rudimentary degree. Inarticulate speech by sounds followed, then articulate speech came and developed the speech center of the brain, taking the place of the right arm movements it occupied a spot in the left brain between the right hand center and the intellectual fore-brain. When writing was added to man's means of expression, the writing center appeared between the hand center and the fore-brain, just over the speech center. All in the "symbolic field."

Language includes signs or speech and speech may be articulate or inarticulate, by words or records, and these may be arranged into prose or poetry.

The earliest equivalent of writing would be the reminder, as when an Indian places a row of stones or a pointed stick to denote a direction so that another may know what road to take or to avoid.

Notched sticks were the oldest form of mnemonic methods. Indians notch sticks for scalps or make a tally of days on a journey. Dairymen kept account of milk supplied on a stick for each family. The Clog almanac and Exchequer tallies of Great Britain are other instances of mnemonic systems.

A step higher comes the notched stick or knotted string called the quippu by the ancient Peruvians, Egyptians and Chinese. Rude sketches on stones were the methods that were then adopted by primitive men, and as colored earths were used, of course the sketches did not last long until the pictures were cut into the rock, mere outline markings, and when the earth was rubbed into the cut lines the colors have been in some cases preserved for thousands of years. Some of the imperfections in these scratched

records can be due to the pictures being partly cut and partly painted, and the earth used in the painting having disappeared. Of course multitudes of perishable materials such as skins of animals were drawn upon by early men, and we learn that the Picts and Scots found in Ireland and Scotland by the Romans were tattooed, and their names are derived from that fact. Tattooing was sometimes tribal marking, but chiefly it was under priestly control and intended to drive away demons and disease.

Double figures facing outward were put upon the backs. In this way the thunder-bird, or eagle, becomes a double-headed eagle, resembling that of Russia, Austria, and the "Holy Roman Empire," which had its origin in the bas-relief of Hittite sculpture³².

Picture writing developed with pictures, part pictures and symbols to develop ideas, and no matter how highly developed the characters might be in pictography they are always representatives of ideas, ideograms. An attempt was made at first to sketch as much of the animal or object as possible, but finally a part of the animal, as its foot or head, was found to convey the idea just as well, and so the advance was made from pictures to part pictures, but often these two methods were mixed in practice. Eventually more marks that gave a hint of the pictures of part of the animal became symbols, just as the letter U could symbolize a hoof which stands for the horse. The Aztec pictographs and calendars of the Dakota Indians are of this nature.

Hoffman thinks that primitive man recorded such things as most frequently occurred in his struggle for existence. Records of his success in hunting notify others of game near, by pictures of animals. Boasting was assisted by his rough pictographs. Buffalo robes and other skins contain personal exploits of the Indians. Sometimes these were drawn on the outside of their tents.

Zodiacal signs are ideograms, the astronomical signs for Mercury the planet is a symbol degenerated from the picture of two serpents twined on a stick, the caduceus of the god Mercury; while the figure standing for Jupiter is a rough sketch of an

³² Wm. Wright, *The Empire of the Hittites*, p. 68, 1884.

arm holding a thunderbolt. Zodiacal signs originated about B. C. 700.

In time man advanced to drawing mythical shapes, such as men with animal bodies or heads, or childish hideous pictures to represent demons of disease, the gods of rain, snow, seasons and other things. Some of these represent things in motion or special attributes, and the attempt to draw signs of gestures still further aided in the suggestion of subjective ideas, as empty hands or ribs indicated hunger, a hand to the mouth meant eating. The Innuits of Alaska is good at life-like pictures. The Ojibwas advanced in picturing gestures and suggesting abstract ideas by sketch signs. Some nations of Europe and Asia went to the "rebus stage," that is, the names of the things pictured were sometimes used in another sense. This rebus constituted sound pictures or phonograms, which Taylor describes as follows: A box with us means a blow on the ear, a receptacle, an evergreen, a kind of wood, and to name the compass points. Now if a picture of a box on the ear were to stand for all these it would be an ideogram changed into a phonogram, we would have passed from pictography to tone writing. This the Chinese did, and a second character alongside the first determined which meaning was to be taken from the homophones, or phonograms of similar sounds.

The Japanese borrowed the Chinese methods and Egyptians began where the Americans did, but advanced to taking these signs for initial sounds, a step called acrology.

The character which had been a picture representing an idea became a phonogram representing a sound, and phonograms may stand for words, syllables or still simpler sound elements which may be called letters, and collections of these simple sounds of any language make its alphabet. From reminders through picture writing to phonetic writing with an alphabet is the course of development, nor have we reached the best stopping place, for our spelling is practically hieroglyphic and our letter symbols have too many sound values, and some have none at all.

The American Indians used reminders; they drew expression pictures and developed complicated pictography sufficient for the writing of real books. Starr thinks that some Mexican and Cen-

tral American Indians were passing from the use of ideograms to phonograms.

Egyptians began with reminders and pictures, and then combined the pictures, complex ideograms, which were gradually made to stand for sounds, entire words. But as the one sound meant so many different things, the picture had to have some kind of additional sign or determinant, to enable determination of which particular object is meant by the sound the picture represents. And some of these characters after awhile came to be used for almost simple sounds like *mu*, from mulek, the owl, and if the Egyptians had discarded all the other hieroglyphics and used instead such characters as stood for simple sounds, the problem would have been solved, but they could not shake off traditional methods so in the latter days of ancient Egypt owing to the differences of methods there was great confusion in writing. There were simple ideograms, phonograms standing for words, broken down phonograms, some of which represented almost elementary sounds, and all of those might appear in one inscription.

Egyptian characters have been classed as first ideographic or hieroglyphic, then hieratic, which was a script symbolizing of the hieroglyphics used by priests, but the common people got up another script system called the demotic, the subsequent development could have been symbolic and finally alphabetic, which it was to a limited extent.

The Phœnicians learned the art of writing from the Egyptians, but usually took only the simplest phonograms, and in this way foreshadowed the first alphabet proper. These simple sound pictures were yielded by the process of acrology, which simply means allowing the picture to stand for the initial of its name, and from Phœnicia these initial letters were carried to Cyprus, Greece and Rome. Tylor says there was in the old Egyptian picture writing a character which meant owl. It was a simple picture of a bird, the word owl was mulek, and in time the ideogram became a phonogram for a syllable *mu*, the *lek* being omitted. Still later, by acrology, or taking the initial of *mu*, the character was used for the sound *m*. The Latins and Greeks followed the example of the Phœnicians, so when we see the letter *M* we know that it came from the Egyptian picture of an owl's head, the ears

are indicated in the upper angles, and the beak in the lower angle of the letter.

The Roman numerals are pictures of fingers, as their name, digits, show, and the reason watch and clock faces give IIII instead of IV is that the method of subtraction by placing a digit before the V had not been used at the time of watch and clock origin, and so the old method survives by rigid imitation from those days. The X denotes the hands crossed and V half of the X, and beyond doubt great periods of time elapsed between the use of numbers of straight marks and the invention of the symbols V and X and the subsequent addition and subtraction values of position of digits after and before these. Some claim the V is the thumb and fingers of one hand. The Chinese begin with digits and cursive corruption has complicated their fours and subsequent numbers till ten is reached, which is a rectangular cross. The Roman, Arabic and Chinese admit of the decimal calculation. Where the toes as well as the fingers were counted, as it is likely was the custom of the ancient Gauls, the vigesimal system became engrafted, hence the French method of calling eighty four twenty, and adding a ten in the case of ninety. Three score and ten in old English is based on the same vigesimal system which considered a score as a man with ten fingers and ten toes. The Mexican caribs call twenty one man.

The Chaldean cuneiform numerals were extremely simple, consisting of one impress of the graver for each unit, but the marks were arranged after a system which could easily have led to arbitrary symbols for each numeral after the Arabic fashion. Dr. Clay, the Assyriologist of the University of Pennsylvania, sketched for me these characters as the Babylonian numerals:

The original Arabic numerals, it is likely, were just as primitive, but it occurred to some thinker to arrange the unit marks so that a glance enabled them to be counted, even by a more artistic arrangement than the Assyrian. If you count the separate marks in the following early Arabic numbers and then compare the intermediate cursive or rapidly, carelessly written script with what preceded and followed in our modern every day figures, you get an idea of the evolution of this mode of recording.

The Arabian numerals came into Europe through the Sara-

cens. Berbert, near the end of the tenth century, was the first who, by traveling into Spain, learned something of Arabian Science. A common literary tradition ascribes to him the introduction of their numerals and of the arithmetic founded on them into Europe³³ in the middle ages.

The ten symbol degenerating into an elongated rectangle and then into a cipher o, but the Romans seem to have borrowed the X for their 10 from the Arabians, which part of that symbol they dropped. The Babylonians developed their large unit mark meaning ten into a cipher, just as the Arabians could have first prefixed a figure 2 to the 10 mark to mean twenty, a figure 3 for thirty, and so on, finally putting a figure 1 before it to denote ten, which converted the former digit ten into the modern cipher, and set the world ages ahead in ability to compute.

1 2 3 4 5 6 7 8 9 0 X

The X in the square evolved from the X between two squares, the circle around the X was the rapidly written next step. Final-

³³ Hallam, Literature of Europe in the Middle Ages.

ly the circle alone was retained by the Arabians, while the Romans borrowed the X from them, preceded by the X inside the cipher for a long while being used by the Romans till the outer circle was dropped.

As Hoffman says: "It is interesting to notice how similarly human minds work in remote places from each other. Given the same problems and similar surroundings, we shall find much the same result."

North American Indians began with pictures, then part pictures and symbols, and were just beginning to think of phonograms. The Chinese began with reminders, then pictures to phonograms, the Japanese went a step further and used sound characters, each of which represents a syllable, but failed to reach the acrology stage of initial letters. The Egyptian began with reminders and pictures and passed through phonograms almost to letters, which the Phœnicians constructed from the Egyptian vantage ground.

The stages may be restated as reminders, such as the quippu pictures or the kind that were put on wampum belts, then combination pictures, word phonograms, syllable phonograms, letter phonograms.

As various nations and tribes pass through practically the same stage of intellectual development, however remote and independent of one another, it is to be perceived that the several stages of the pictorial, syllabic and alphabetic representations of thought were not contemporaneous, but were developed in different portions of the world at various periods of time.

An immense time is between the pictures and the alphabet assisted greatly in the step from barbarism to civilization in the Mesopotamian valley when the Babylonians had only ideographic cursive script, that is, a conventionalized set of marks representing words or names of former pictures.

It was not until the alphabetic characters became separated from their syllabic progenitors that the highest civilization became possible. The employment of a cumbrous syllable and ideographic system of recording sound is a hindrance in the development of many forms of progress, as is shown in the culture states of many oriental people.

The discovery of alphabetic characters made possible the record and transmission of language and culture in history, literature and science, and nothing seems more natural to us than to write our thoughts by means of 26 phonograms, the graphic symbols of the sounds which we call the alphabet.

Rawlinson says that the Phœnicians resolved speech into its elements by looking for some common object with a name the initial of which made the sound they wanted to express. In this manner the eagle was made the sign for its initial sound *akhom*, and represented A, and other words having a similar initial sound were also employed to represent that letter. B was expressed by a leg and foot and two other characters. There were four forms for T, three for N, for K, for S, for J, for KH and for H, while there were two for L or R, which the Egyptians regarded as the same. There were thus several sounds for each letter, except F and D, which were represented by a single hieroglyph, the first by a horned snake and the last by a hand with the palm upward.³⁴ The letter M is traceable through Roman and Greek to the Phœnician, and finally through the hieratic to the linear hieroglyphic owl.

H came from the Egyptian sieve, a circle with dots which degenerated into a square with lines in Phœnicia, and with but one middle line in Greece, and in the Roman usage and later Grecian the top and bottom of the square was omitted. L is a crouching lion.

Although the alphabetic prototypes existed in the Egyptian hieroglyphs, and were by that people unconsciously employed, in a certain sense it was not until the Semitic race discovered and utilized these characters by acrologically adapting them to their own language that the alphabet can be said to have been made.

The Semitic peoples composed three principal divisions, each of which developed letters. Europeans are indebted to the Phœnicians, and from the highlands of Asia Minor, Aram, came the Iranian group of alphabets, which replaced the cuneiform writing as a script of the eastern provinces of the Persian empire. To the south Semitic type the ancient alphabet of India with its numberless descendants must be referred.

³⁴ Taylor, *The Alphabet*.

Europe uses Aryan speech with a Semitic alphabet, and while our letters are Phœnician by the Roman letter divisions upon our watches we are Babylonian, and our present method of dividing time is from Babylon, which was adopted by Hipparchus in the second century B. C. Max Müller further notes that twenty shillings to the pound originated in Babylon, and that the ratio of gold to silver in ancient Mesopotamia was 1 to 13½.³⁵

Written speech was first sketches, then marks that stood for the sketch or picture, then pure signs or symbols.

Signs of words, signs of symbols, signs to express the sounds of syllables, signs to express the sounds of letters, signs to make a once existing letter, such is the order of development of written speech.

Hard stone was incised, soft cut in relief, in wood carved, in brick stamped in soft clay, or leaves of leather, parchment painted with ink brush, or written with pen or quill, wax tablets written upon by stylus. Some writing like that of the Jews from right to left, others, like that of the Babylonians and Greeks, written from left to right, or alternately above downward.

Assyrian writing became wedge-shaped when clay came into use as a writing material, because the marks were impressed with the corner of a square-headed implement, the clay afterward being baked in the sun or in an oven. In Greece votes were inscribed on oyster shells (ostraca), and it was by these votes that banishment or ostracism was made.

Language was reduced to writing by accidental development and the inducements its advantages held out, but by very slow degrees and after millions of blunders, while multitudes of races have not corrected their blunders. Even now the largest number of languages have produced no literature, and the Phœnician inventors of letters did not leave any evidences of their appreciating the value of their discovery very highly. We are able to translate Egyptian by the chance finding of a stone engraved with fourteen lines of Egyptian hieroglyphics and its Greek translation. This Rosetta stone remained the small portion of hieroglyphical writing upon which ability to translate other inscriptions rested until the discovery of the decree of Canopus, another stone. The

³⁵ Select Essays, Vol. II, p. 498.

Rosetta was on hard basalt and the Canopus on lime stone, dated at Memphis, March 25, B. C. 196.

Schleicher, Lottner and Fick studied the Aryan languages from a genealogical relationship, but Schmidt³⁶ gave them geographical significance alone, and instead of a tree branching into divisions of the Indo-European stock, he represented the Aryan tongues as a wave spreading in concentric circles ever thinner in proportion to their distance from the center, or even an oblique plane, inclined from Sanskrit to Celtic in an interrupted line.

When writing became developed it was at first kept secret by the priests for their particular use, pretty much as Egyptian and other priesthoods have thought it profitable to keep the common people ignorant so that more wealth could be frightened from them.

"Scalds" before the general diffusion of writing committed matters to memory such as laws, customs, precedents, among the Scandinavians, and were living books. After the first half of the twelfth century they disappeared, as writing began to be more general.

Book is from the German Buch, originally identical with beech, the early books being tablets made of beech wood. Saxons and Danes used beechwood for making books. The Saxon name for beech was boc, the Danish name was bog, so northern natives derive their word book. The Romans used the thin peel liber between the wood and the bark. From this is our word library, and the French use livre, because the Romans called this peel liber, and later applied it to all books, however written. Romans rolled up their peelings and called the roll volumen, whence our volume. The Roman Senate, wrote edicts on ivory and called the plates libri elephanti.

The methods of conveying ideas by symbols are divided into metonymy, synechdoche, metaphor and enigma.

Metonymy, as when a blood-stained club signifies an enemy killed, a crescent to denote the month, as among the Ojibwas. The Dakotas represent battle by two arrows pointing to each other. Metonymy substitutes one thing for another.

Synechdoche, the substitution of part of an object or idea

³⁶ D. Pozzi, Aryan Philology, 1879.

for the whole, which is common in Indian picture writing, as when a horse shoe signifies horse, a turkey's foot for the turkey, hoof prints of other animals for the animals themselves, small claws for the black bear and large claws for the grizzly. To go, to come, among the Ojibwas, is represented by the soles of the feet. To run, with Mexicans, Egyptians and Hittites, was expressed by pictures of legs in the act of running. A human head, among the Indians, with animal or other object below, indicated a personal name.

Metaphor. The Egyptian mother was represented by a vulture because this bird was said to nourish its young with its own blood; a king was a bee because this insect was subject to monarchical government; a priest was a jackal to indicate his watchfulness over sacred things.

Enigma. The Egyptian Ibis represented Thoth Hermes, the god, owing to supposed mystical connection between the bird and the deity. A lotus stood for upper, and a papyrus lower, Egypt. A sphinx, which was a man's head on a lion's body, in Egypt represented royalty, or intellectual power, combined with physical strength. The prevailing idea of gods and kings.

Abstract ideas. Ideographs of that kind were frequent and in some tribes more than others. Meat in a pit signified plenty, as the Indians covered their meat in caches when abundant. Pictures of ribs or a bar across the abdomen meant hunger. A symbol like our figure three indicates cramps in the stomach or fatal sickness. Crossed pipes denote peace.

In Egypt the sign for a year was a palm. Ojibwas indicate spring by trees with buds. Winter is a curved line with zig-zags falling from it for snow. Taylor³⁷ says out of the Semitic cuneiform arose the Turanian photo-Medic syllabary, and on the other hand the alphabet of the Aryan Persians. The latter was solved acrologically,³⁸ and retains images of the syllabic writing out of which it sprung.

Linear Babylonian consists of ideograms with pictorial remains. Later the arrow or wedge-shaped character came, and convention obliterated the pictures. An example is in the Assyrian

³⁷ Taylor, *Op. Cit.*, Vol. I, p. 39

³⁸ Sayce, *Science of Language*, Vol. I, p. 321.

ian cuneiform character Kha, a fish, from the older Babylonian sketch, which looks something like a fish, while in Linear Babylonian the fins and the tails are more distinct and resemble the outlines of a fish as drawn by the Ojibwas of the present day. The city of Nineveh was originally a collection of fishermen's huts, so a fish is drawn in an inclosure and represents Nineveh.

Taylor suggests that some dyssyllabic Akkadian words were simply worn down by phonetic decay into monosyllables, which became the phonetic values of the characters. Suppose we utilized the childish da, de, di, du, dy, into combinations of dodo, dido, dady, etc., the original syllables having no value by themselves. The original Babylonian is traced to the twenty-seventh century B. C., and the oldest Akkadian, by Sayce, to 3000 B. C.

Another syllabary called the Hittite is traced by Major Condor³⁹ as non-Semitic, and, like the Tartar or Turkic tribes, the Hittites were first referred to by Sargon about 1900 B. C.

The names of persons were originally single, as in Hebrew bible genealogies, also in Egypt, Syria, Persia, Greece, Italy and among the Celts and Teutons. All such names were originally significant, usually of some circumstance of birth or some sentiment, and among the North American Indians they were often indecent, and a new name might be imparted at any time, as among the Cheyennes a cut-off finger caused one to be called tama-atse, which was afterwards changed to mimisit, on account of his big voice.

The Roman named after occupations, as potsherd, or a peculiarity, as a long nose, and many Celtic and Teutonic names brought in the deity Gottfried, Godwin, or spirits, as Elfic (elf king).

Later the Romans were divided into clans, or gentes, subdivided into families. Thus in the gens Cornelia were the families Scipiones, etc. Each citizen had three names, the prænomen, or first name, which was the individual name, the clan or second name and the family name was third, the cognomen, and there was a distinctive name. The Publias Cornelias Scipio was of the Cornelia gens and Scipiones family, and Publius was his individual, or what is now called his Christian name. The agnomen

³⁹ Journal-Trans., Vict. Inst., 1889.

or honorary title of Africanus was added for his "carrying the war into Africa" against the Carthaginians. Lælius Cornelius Scipio Asiaticus was his brother. The Senate granted Germanicus to the elder Drusus and his posterity.

Mythological childishness is associated with names by primitive peoples, thus the American Indian may know that his grandfather's name was Running Wolf, but as he has known nothing of his great-grandfather's personality except that he was called Raccoon, that savage is likely to imagine that he descends from a real raccoon animal.

The English and Welsh registry lists show that Smith is the commonest name in the kingdom, being one of seventy-three of the population. The ancient armorer was a skilled mechanic and proud of his occupation as an armor smith; he ranked with silver smiths, all of whom naturally adopted the names of the occupations by command of feudal barons who could trace their subjects better for taxation purposes through compelling them to adopt family names, or John the Smith and Robert the Clerk, eventually came to be known as such, and the confusion was added to by the old custom of taking as a surname Johnson or Smithson, Robertson, Clarkson, according as the son was named after the father's first name or his occupation, with the affixed word son. Jones is commonly Welsh, and is the same as John.

Analysis of the 1855 registry shows among the fifty commonest names that 34 per cent are named from occupations, 30 per cent are named from corrupted first names by their phonetic corruption, abbreviation, or the affix son and sometimes with all of these changes. Eight per cent are named from localities, and 8 per cent from colors.

The commonest names in England, from the registry of 1855, are as follows: Smith, Jones, Williams, Taylor, Davies, Brown, Thomas, Evans, Roberts, Johnson, Wilson, Robinson, Wright, Wood, Thompson, Hall, Green, Walker, Hughes, Edwards, Lewis, White, Tanner, Jackson, Hill, Harris, Clark, Cooper, Harrison, Warden, Martin, Baker, Davis, Morris, James, King, Morgan, Allen, Moore, Parker, Clarke, Cook, Price, Phillips, Shaw, Bennett, Lee, Watson, Griffiths, Chester.

The first is the most numerous, there being one Smith in 73 of

the population, the Chesters, Roman for camps, being one in 551.

Campbell of Scotland is plainly from *campo bello* of Italy, or beautiful country, and the same meaning is contracted into *Beauchamp*, from *beau champs* of the Norman French. In Spain the son inherits names from both parents, or may choose which one he pleases. Hereditary surnames began in England in the fourteenth century. Many adopted names from localities, and prefixed *d* or *o* as *John o'Groat*. Some were named from animals, probably from coats of arms of the barons they followed, many from occupations, and among all of these are obsolete words the original meaning of which has been lost. *Smith* meant to smite in English, and included wheel-wrights, carpenters, masons, and smiters in general, the German *Schmidt* included armorers. Personal characters gave names as colors, brown, black, white, green and red, the latter was read, reed, or reid, in old spelling. *Alfred* meant all peace. *Patience*, *Prudence*, *Faithful*, *Thankful* were at one time popular. Formerly an act of parliament was required to change names, but in England it is now decided that one can change his name at will. Americans adhere to the old English custom of seeking legal sanction for changing names.

The ruder population of Europe continued to use single names. There were a few surnames in England before the Norman invasion. As many had the same name a further designation was needed. Christianity displaced old heathen names by names from the bible, and sometimes to save trouble whole companies were given the same name in baptism. At first it was not common to transmit the surname from father to son, but in the twelfth century persons of distinction took surnames and of course it became fashionable to adopt them. *Henry I.* had a natural son upon whom he conferred the name *Fitz Roy*, or son of the king, *fitz* being a corruption of *filis*. *Petrovitch*, *Ivanovitch* has the same value. *Mac* is *Gælic* Scotch and Irish for son, and *O* is Irish for grandson and the Welsh prefix *ap*, and they even use a string of *aps*, as *ap Griffith*, *ap David*, *ap Jenkin*, *ap Hugh*, *ap Morgan*, *ap Owen*. *Griffith Williams* was a means of stating that *Griffith* was the son of *William*, from which originated many names ending in *s*. *Adamson*, *Johnson*, were also

⁴⁰ Lower, *English Surnames*, 1842, and *Ferguson*, same, 1858.

used until finally fixed in a family. Instead of John, the son of Adam, and Adam the son of John grew up John Adamson, the family surname, and thus many Christian names became surnames.

There is no w in the Anglo-Saxon or Mæso-Gothic alphabets, hence such words as "Villiam vat of it," and vell for well. The aw sound of a is also from old French, but some words undergo strange mutations, as vases pronounced wahses and vestcoats wes-kits. There is no w in French and so the Frenchmen pronounce Washington Vashington, or by extra effort Guashington, and his Guilliame we render into William.

Parallel to the word Hindu passing to the Greek through Persia, and thence to us with the H left off, the London cockney dialect is said to be an attempt to imitate the Norman French by omitting the h, a habit assigned to Greek cockneys who passed it to all the Latin tongues, thence through French it found its way to Whitechapel and Threadneedle streets, and to Windsor and Buckingham palaces. And apparently by way of revenge the common people balanced matters by putting an h on every exposed vowel. Hedge originally meant edge, or boundary. Hear was ear, hearing was earing. Hall was a place for all, and the accepted omissions of h are 'onerable, 'umble, 'umor, 'eir, 'are, 'ow, 'onest, 'otel, 'ostler, 'arbor, 'oo, 'andiron.

If you are right handed the speech faculty is situated in your left brain a little forward of the upper part of your ear. How do we know this? By the very simple fact that an injury of that part of the brain causes loss of the ability to use language. If you are left handed the speech centre is in your right brain. This may be accounted for by gesticulations, mainly by the right hand, having preceded vocal language millions of years, and the speech faculty was grafted upon right hand gestures, the centres for which are over the left ear and above and behind the speech centre. This part of the brain is called the symbolic field because in that region is the control of the voice in articulate speech and in intelligent gesticulation. Some of this association of speech and gesture centres is evident in the motions made while speaking, such as drumming or playing with the fingers, scratching the head to help the thought and even certain monotonous and

inappropriate arm movements while talking. One will wave his right or left arm up and down and sideways. In writing the child moves the tongue as do some when cutting with scissors.

Speech helps to develop the fore brain, and it is the left fore brain that is the more important intellectually, just in front of the speech centre, and as the majority of people are right handed so the left fore brain in association with the left speech centre is connected with the left brain centre for the right arm, hand and fingers that are used most in gestures.

As the education in speech depends upon hearing and the eyesight, the latter especially for reading, then both the arm and speech centres in the symbolic field must receive nerve connections from the optic and auditory centres. Where writing is more the habitual means of expression then the right fingers center in the left brain is better developed, as in the case of Addison and Goldsmith. But when the speech faculty is well developed there must be an organic basis for it in the better construction of that particular part of the brain.

Laura Bridgman, the blind deaf mute, thought in terms of gesture and in her dreams she moved her fingers in sign words, hence her fingers and arm centres coupled with face centres for expression were main thought regions in her brain. In others with the normal faculties thought is often in terms of the language learned, but not all thought, for the recalling of appearances can be independent of speech ideas, but many ideas are in speech terms, as when one thinks in German or in French, etc. It is not necessary that all his thoughts need be in language, many of them can be in reading terms, and probably still more in gesture or expression terms, pictures, hieroglyphs practically.

Language merely imports the capacity for higher range of thought. It is likely that ancestral languages may be more readily acquired even though not previously heard, because the brain adjustment may be such as to favor its acquisition. For example, one who had French ancestors brought up in an English environment spoke English excellently, for he had never heard French, but when later in life he was among Frenchmen he learned that language quickly and easily. As a rule where children are brought up among foreigners the language they hear

most is the one they use. It is stated, however, that where German and French are equally spoken the child is inclined to use German more, and if English is alternate it will be preferred as admitting of quicker thought expression.

The baby's movements are at first badly regulated, he kicks, sprawls and throws his arms, often in the wrong direction when he attempts to grasp some objects. He denotes pain and pleasure by merely crying and laughing. Little by little the infant regulates his movements for walking and handling, and acquires the ability of pointing at or motioning away persons, denotes pleasure by words and smiles, and displeasure by shaking his head or turning away, and soon he begins to articulate such words as "go way," "lemme 'lone," etc.

An important inference from this is that manual training would develop the symbolic field of the brain and afford a basis for mental development; where purely linguistic studies would tend to create inefficiency by crowding the speech centre with symbols that are seldom used, comparable to the differences in education that exist between the skilled mechanical engineer and the clownish contortionist. The gymnast is not a watchmaker or a pianist, nor is the elocutionist an orator. But both elocutionist and orator may have undeveloped frontal brains and in their intellectual poverty make use of phrases in emotional rather than rational ways, depending upon the inability of many hearers to discern jingle from sense.

Nerves concerned in speech meet in the speech centre of the brain in the insula operculum, and according to which region, whether in front or behind, is injured we may have ataxic aphasia, the inability to speak words, though we may remember them, but ideas in other terms may remain as in the instance of an inability to remember or to say the word milk, though the patient may ask for "that white fluid we drink." So there must be a separate part of the brain for more generalized ideas than where names are stored up, and this accords with C. K. Mills' naming centre doctrine.

And injury of the brain has reduced the words to a few exclamations, or to such absurd expressions as "saw my leg off," a survival of an old college song.

There may be agraphia or the inability to write words independently of speech integrity or impairment. A patient with right sided paralysis could only say "Aye, aye," to every question, another only "O, yes," and still another "Toot, toot." He was a cornet player. Sometimes there may be word blindness, word deafness and complete aphasia in the same person without paralysis. Paraphasia is where the wrong word is used in attempts at speaking. If the left temporo-sphenoidal is injured there is word deafness, sensory aphasia.

Speech derangements are of various sorts and assist our knowledge of the brain workings. When there is dumbness in the course of hysteria the cause can be found in cramp of the blood vessels supplying the speech centre at the root of the lowest, third frontal convolution, just in front of the ear. The whispering trouble in hysteria is a partial paralysis of the vocal cords. When coughing propels more blood to the head, and the arteries in the speech centre are thus filled, then a temporary recovery of the voice follows. Hysterical mutism or dumbness sometimes comes on during a convulsion.

The word hearing centre in the left brain extends along the upper temporo-sphenoidal convolution at the brain base on a line backwards from the forehead behind the upper part of the external ear. Its injury induces what is called auditory aphasia, or inability to recollect words or attach any meaning to them. Paraphasia is the disorder of speech where the wrong word is spoken and the right one cannot be recalled, an incomplete damage to this word hearing centre may be the cause of this difficulty.

The word speaking centre is in the left brain at the base of the third frontal convolution, in front of the ear. Its derangement prevents words being articulated, though they may remain in the memory. The word seeing centre is located in the back part of the side of the left brain, extending from the posterior tip forward to over the ear, between the angular and cuneus gyri.

When this region is injured there is inability to recollect printed or written words, though the words themselves may be remembered and the ability to pronounce them may remain.

At the root of the left second convolution behind the temple is the motor centre for writing, damage to which will disable the person from writing or figuring, even though printed and

written characters may be recognized. The artist depends upon the integrity of this part for his ability to make pictures.

Writing is often affected at the same time with motor aphasia. That is, when a person is disabled from speaking from loss of ability to articulate words he may, also, be unable to write, owing to these centres adjoining.

Trousseau⁴¹ says "the greater number of aphasics are paralyzed in the right hand and cannot write, and if they acquire the habit of writing with the left hand it is easy to see they cannot trace in writing many more words than they can express in speech.

The world-blind patient may be figure-blind also, and the artist would cease to understand his own drawings when the word-seeing centre, the angular gyrus, is invaded. Some are able to read the figure 3 but not the word three, others have loss of memory of certain printed or written letters or words, as the paraphasic has for spoken words. Object or mind-blindness is the failure to identify objects, and the cuneus gyrus occipital tip or hindmost part of the brain is concerned in this trouble. One may fail to see with half of the eye toward the nose and half of the other eye toward the temple, the outer half of one eye and inner half of the other.

The musical faculty may be retained with aphasia. One case could not speak but could sing songs with the words correctly.

Amimia is the loss of the ability to gesticulate, as to nod or shake the head to express yes or no. In paramimia the gestures are used wrongly.

The power of emotional expression outlives that of other faculties.

Echolalia is the repetition of anything said; this disorder occurs in some persons.

Some insane give conventional replies as "very well, thank you," with very little other ability retained, and a superstitious significance may be attached to a word. The agonizing search for a name, word or a number forgotten is called onomatomania.

Embololalia is the affliction of involuntary putting in meaningless words or syllables like hemming and hawing. Kussmaul

⁴¹ Clinique Medicale, p. 708.

tells of a general who put *mamma* between every three or four words.

Logorrhœa is like the *verbigeration* of mania, a flow of words. *Bradylalia* is slowness of utterance from depressed functions. Stuttering and stammering are faulty regulated speech. In *parietic dementia* the speech is slow and stumbling, particularly over the letter *r*, which is difficult to pronounce.

In *terminal dementia* there is often a disposition to invent new words as the child does, and it is noteworthy that in the infancy of man and of the race new words are incessantly invented and forgotten as in the condition of destruction of the intelligence in the course of dementia.

The loss of memory of words occurring with advancing age or infirmities are first for proper names, special or concrete nouns, while abstract nouns and general terms may be well retained; such words as *yes* and *no* may be retained when all else is lost, and the ability to swear or exclaim is quite persistent, equivalent to the growling or snarling of animals. Kussmaul⁴² continues to be the standard author on the subject, though John Wyllie⁴³ of Edinburgh is a later writer of a good work of reference.

Chinese has some traces of agglutinations and incipient inflection. Ancient Greek had intonation in its accents. The Aryan had instances of vowel inflection. Some Aryans and some Semitic tongues use prefixes. All languages have connectives. All languages use positional grammar to some extent. Chinese is one syllabled positional and intoning. Japanese is agglutinative and positional. Zulu inflects by prefixes. Hebrew inflects by affixes to the root. English is both monosyllabic and constructs sentences by connectives. English remains to some extent the power of combination of the agglutinative stage. Thus we say *railroad* or *railway* where the French are confined to *chemin de fer*. *Steamboat* where they say *bateau à vapeur*, *chambermaid* where they say *femme de chambre*. The Norman French curtailed this compounding of words, which was going to excess. We see the ill effects of this excess in the tendency in German. A few words in English show the remains of former inflection which

⁴² Kussmaul, *Treatise on Disturbances of Speech*.

⁴³ *The Disorders of Speech*, 1894.

English discards. "It is barely possible that all these varieties of language formation, the monosyllabic, the agglutinative, the holophrastic, the inflective by prefix, the inflective by vowel change, the inflective by affix, may have sprung from one and the same original tongue. They seem, however, to follow race characteristics, and they may have originated at different centres in spite of the fact that one set of inflected tongues, the Aryan, can be reduced to roots of one syllable. One thing is certain, there is a constant tendency to word variation in language, and there have always been dialects. Whitney has pointed out that each human being has a language to himself. His part of the mother tongue is not identical with that of any other. Household differs from household, tribe from tribe, province from province. From this fact with sometimes an added difference in origin, or some historic happenings, comes the existence of dialect.

Change in language comes about in six ways: Change in the form of words, in their meaning, in the total disappearance of words, the loss of grammatical form once had, and the introduction of new grammatical forms. Whitney illustrates the first two by the Greek word *episkopos* changed thus in form: Latin *episcopus*, French *éveque*, Spanish *obispo*, Portuguese *bispo*, Danish *bisp*, German *bischof*. Inflected English *biscop*, English *bishop*, Italian *vescovo*, while the person meant by the original Greek, a mere superintendent of trembling proselytes, has become an ecclesiastical prince, having great revenues and wielding august authority.

Phonetic decay attacks vowels and consonants. Phonetic convenience of ease in thinking and speaking have changed language. Economy in utterance lies, like gravity, in waiting to pull down what tradition or literary prestige cannot build up. Unconscious changes in speech are made from generation to generation. Syllables are shortened, stress changed from one syllable to another, compound words by fusion are made to appear simple, the vowel changes called in German *Ablaut* and *Umlaut* are developed, words are annexed from other languages, the slang terms produced by ignorance or humor are adopted into the language. There are variations in intonation even among those speaking the same language. A Scotchman seems to an Englishman to be

always asking questions, because he raises the pitch of his voice toward the close of all sentences.

Grimm's law in that p, b, f, in Latin, Greek and Sanskrit, become in Gothic f, p, b, and in old high German b, f, p. Also, that t, d, th, in Latin, Greek and Sanskrit became in Gothic th, t and d, and in old high German d, z, t. Also, that k, g, ch in Latin, Greek and Sanskrit become in Gothic k, k, g, and in old high German g, ch, k.

French stress is uniform, and hence intonation is monotonous, dramatic verse being sing-song. All structure is the result of growth. The capacity of making a noun do duty as a verb: "he eyed the man," is a new power for a once-inflected tongue. Dialect construction is the same as language division, separation of races, lack of fixity of language owing to being uncivilized, neighboring tongues, childish delight in playing with language produce dialects. Provincial life, lapses, intermarriage, slang also make dialects. Many expressions and pronunciations once common in England are found now in Ireland, and in Virginia and the Carolinas. They are the Elizabethan English, but they died out in the England of the Hanoverian kings.

When dialects drift apart and become separate languages the parts that remain are the numerals, pronouns, family relation terms and forms of the verb "to be." Likenesses sometime remain thousands of years and across wide continents after all trace of the vocabularies have passed away, as the verb "to be" witnesses.

Agglutination varies from a scantiness hardly above the isolating language, to intricacy approaching inflection. In three orders: By simple attachments as with Finns, of holophrastic type as in America, and with some vowel inflections and consonantal change by assimilation, as in Bantu tongues.

There is a principle of symmetry peculiar to each type of language. That of the monosyllabic is intonation, though all do not have it. That of the Semitic is a wonderful euphonic law of vowel change. That of the Aryan is the law of symbolization.

The Agglutinative tongues of Akkad, of Sumir and the Hittite confederacy were of undoubted antiquity. The races using this type of language, that were not subjected to the influence

of civilization, improved their speech by natural processes of evolution, into approximation either to the holophrastic or to the inflective type. The In-nu-it is an instance of one tendency, the Australian tribes of the other. The Basque agglutination affixes approach inflections. Nor will it do to say that grammatical gender is found only in the Aryan, Semitic and Hamitic tongues. There is something of the sort in several agglutinative languages. The holophrastic tends to reduplications. In the Hamitic is the embryonic Semitic, a line of development from monosyllables up into bilateral and trilateral roots.

The ancient Egyptian is a low type, the root is unchanged and number formations are by affixes. In Semitic there is the highest trilateral root system and euphonious vowel interchange. Assyrian had terminal inflections for cases, Hebrew has it for gender and number. Arabic has positional grammar like Chinese. The Semites were later than the Akkads. Egyptians and Hittites were civilized and began their languages at a proper stage of evolution, but it is evident that their tongues had once passed through stages identical with those of Basque and Bantu. Aryans were still more fortunate. Their language fully developed its capabilities before they reached full civil organization and literary expression. Kelt, Dane, Norman and Aquitanian gave gifts of blood and language. Through French both language and literature made vast gains. French was an analytic development of Latin when English was still in the inflected stage. Hence the ready triumph of Norman French when in contact with the other tongue. It made English even more analytic than itself, and then it succumbed to English. Still its literature and its social prestige have always largely affected both English literature and usages. English is the heir of all these tongues, Latin, French, Low German, Scandinavian, Keltic and all other lands and tongues are used when necessary to name new things. It is rich in idioms, dialects and synonyms. Its serious lack is that there is no rational alphabet and that English is very far from being consistent with the sound of spoken English.

Hutson's resume is as follows: Languages are divisible into the:

1. Monosyllabic, each sound by itself and relations of words expressed by position and tone.

2. Agglutinative, where simple sounds combined by mere juxtaposition and utterance together form the compound idea.

3. Holophrastic (telling the whole), where the agglutinative plan is carried to the length of putting together in one utterance all the ideas it is intended to express.

4. Inflectional, where the relations of words to one another are determined by some change in the form of words.

5. Analytic, where the synthetic methods having done their full work, and a reaction against that system setting in, the relations of words to one another are expressed by small particles that serve as stepping stones for thought.

The inflectional is the climax of synthesis. By clashing of diverse inflected tongues and by phonetic change and decay language passed from the highly synthetic form of inflected speech to easy and simple analytical forms. English, French and Persian for instance come in part to resemble the early monosyllabic type. It is polished, an instance of survival of the fittest. No human being is born with speech, he is born only with the faculty for speaking, and must learn to do so from those around him. An English child in China learns Chinese; speech, then, is not innate, but acquired, it is social. The child that grows up among wild beasts will not speak any language.

While Greek, German and English agreed in keeping nearly the same word for the girl child *Thügater*, *Tochter* and *Daughter*, Latin lost the word and used *filia*, the feminine for *filius*, its word for son. On the other hand, while Latin kept a word for father's brother *Patruus* and another for mother's brother *Avunculus*, English has kept only the ambiguous word *uncle*.

By the process of exuviation from the primitive method of naming all relations this throws light on the condensing process of one name taking the place of several former words.

It was Horne Tooke who first made the guess that the endings of nouns, adjectives and verbs once had an independent life of their own.

In words, says Fred W. Farrar, we find the biological laws of "the struggle for existence, the importance of intermediate

types, the perpetuation of accidental divergences, the powerful effects of infinitesimal changes long continued; above all, the beautiful law of analogy, the law which shows that there is unity in perpetual variety."

In French and English there are many thousand words almost identical in either form or sound:

Pronouncer, imiter, avancer, commencer, compteur are plain to the English eye, and by pronouncing *k* as in old English the French *canif* becomes *knife*.

So *bread*, *butter* and *cheese*, in the German *Brod*, *Butter* and *Kase* show the relationship of English and German, and thousands of other words are more or less the same.

In all the inflected languages the endings of nouns vary so greatly as to have made it necessary for the grammarian to distribute nouns into various classes called declensions, each being made up of nouns that use the same inflection. The same system of endings was applied to pronouns, adjectives and verbs, and in the verbs the various orders of inflections were classified by the grammarian as conjugations.

The original roots found by philologists are of the simplest structure, and no doubt must have passed through the stage of agglutination before they began to develop the more fruitful forms of inflection, these being the result of attrition and phonetic change and decay through the principle of unconscious economy of effort in utterance. Aryans developed both forms of inflection, that by terminations as well as by vowel change. Semitic races, when they passed beyond this agglutinative stage, clung to the internal method of inflection and based the whole structure of their language on so doing.

Being slow in developing civilization, the Aryans escaped the crystallization that earlier civilization entails.

But some credit is due to the innate genius of a race for this result. The Aryans were destined to be worthy of their high position as the ultimate masters of other races and of the forces of nature.⁴⁴

Children and rustics may drawl and prolong one syllable into two, and some children have to be broken of the habit of drawling

⁴⁴ Hutson, *The Study of Languages*, p. 50.

wa-all, boa-ard, fa-an, etc. Sta-at, bo-ot, etc., are adult instances. The Mountaineer Crackers drawl thus and maybe the Yankee whine is from similar peculiarities of speech.

Even in the origination of any existing language there must have been contact of tribes and races and a separation among tribal units gave way to some force impelling unity.

Exogamy impelled mating with wives of another tribe, and hence the evils of inbreeding and rival contentions for sweethearts in the same tribe were escaped. Often tribes were practically families, so marrying out of the tribe was as natural as marrying out of one's family. Hence dialects arose with masculine and feminine forms of speech. The Burmese has this distinction. Disagreements between sex and gender are explained by this.

Language is a growth and cannot be artificially constructed into an universal tongue. The tendency of all language is from simple roots to synthesis and by disintegration and substitution from synthesis to analysis. By phonetic decay the tendency is to analytic structure.

Semitic and Aryan roots are wholly diverse. Agglutinative tongues are very diverse in structure and origin. Monosyllabic dialects cannot be classified as having identical origin.

Civilization brings development of a language to a standstill. Some races reached this plane during their monosyllabic stage, others at the agglutinative, and others in the inflected stage. These are the yellow races, the Chinese having reached civilization before their language had grown out of the monosyllabic stage. The Tartars had attained agglutinative and the Osmanli Turks had climbed to a sort of inflection.

The white races were capable of indefinitely continuing and perfecting a civilization carried up the highest forms of inflection in the time of their long youth, while they remained aloof from the centre of civilization.

English is cursed with atrocious spelling, but not forever. It comes from its complex origin.

Man existed in America in the closing of the quaternary period, chipped arrow heads have been found beneath elephant bones in the Missouri Valley.

A long compound idea being bundled up in one utterance is holphrastic and a reduplication of the same syllable expresses the plural.

The holophrastic languages all belong to the American continent and to one race, though that consists of many tribes.

Hutson⁴⁵ compares Akkad, Finnish and Magyar as similar Turanian tongues, and speaks of both Akkadi and Sumeri as Turanian near the mouth of the Euphrates 4000 years B. C. That the Akkads used papyryi or parchment and hieroglyphs as script. When the Akkads came down into the plains they exchanged the smoother writing material for clay and used cuneiform characters.

They extended from the Mountains of Elam to the Island of Cyprus, and may have formed the basis of Egyptian civilization, possibly the Etruscans. Eridu was a great commercial city. Akkad and Sumeri were agglutinative tongues. The Yakut, a Turkish tongue on Siberian seas, has no verb. Sit means one concerned in whatever the root signifies, like "enger" in French, boulenger, etc.; ati means wares, ati-sit thus means a merchant, ayi-sit a creator.

Powell⁴⁶ summarizes thus:

Combination. Two or more words may be united to form a new one, and four methods or stages of combination may be noted.

(a) By juxtaposition, two words placed together, and yet remain distinct words. In Chinese the roots giving no clue to the sense of united words.

(b) By compounding two words into one, where in which case the original naming of roots is not changed: house-top rainbow, tell-tale.

(c) By agglutination, where one or more of the elements may be changed, but the elements are fused together: truthful, holiday.

(d) By inflection, greater modification of the roots by com-

⁴⁵ Hutson, *Op. Cit.*, p. 107.

⁴⁶ Bureau Eth. Rep., 1879 to 1880, Vol. I, J. W. Powell on Evolution of Language.

bination to form new words, conjugations and declensions.

These methods run into each other:

Compound words when two or more unchanged words form one.

Agglutinative when slight change occurs in roots.

Inflected when greater change occurs in roots.

In these inflections there is a theme or root and a formative element, the latter to qualify or define them, to indicate mode, tense, number, gender of verbs and other parts of speech.

Mallery classifies language as:

I. Isolating languages, words arranged together without change, form or grammatical construction. Spoken by Chinese, Siamese, Burmese.

II. Inflecting languages. Each word shows by its own form its relation to the idea which it represents. Aryans: Sanskrit, Latin, Gothic.

III. Agglutinative: Formed by suffixes to words modifying and limiting it. Finns, Turks and many North Asiatic tribes.

IV. Incorporative languages: Leading word split and modifier inserted, prefixed or suffixed, so the whole sentence sounds as one word. Most American tribes, Basque also. Causes of changes in languages, war and migration.

The simpler these conditions of life the more accurately does similarity of language testify kinship of blood.

The deduction could be made from considering the history of language creation that the only rational method of studying a foreign language is that of Richard S. Rosenthal. Sentences are learned rather than isolated words. The words are divided into necessary and unnecessary ones. Shakespeare used 12,000 words, Milton 11,000, Carlyle 9,000; Prendergast estimated that 600 words sufficed the generality of mankind, and Bayard Taylor estimated that 1,500 were all that were needed for practical purposes. Rosenthal thinks that 4,000 are used in common transactions. He advises using these sentences until you think in the foreign languages. All these sentences are practical phrases based upon actual occurrences of every-day life. He also thinks that study should be aloud in mastering a language.

The visualization process of teaching children to recognize words before learning their letters is also in accordance with nature, as man has acquired his familiarity with written symbols first as mere pictures and representations of pictures, and certainly so far as English is concerned the discordant spelling makes the word a mere symbol composed of letters often having little connection with the pronunciation. We are frequently forced to write a word and examine it "to see how it looks" before being able to say if the spelling is correct or not.

If Shakespeare could stand on our stage today he would appear to talk to us in an unknown tongue, though his writing is as intelligible to us as then, says John Peile.

"Literature was assailed in its downfall by enemies from within as well as from without. A prepossession against secular learning had taken hold of those ecclesiasts who gave the tone to the rest. It was inculcated in the most extravagant degree by Gregory I, the founder in a great measure of the papal supremacy and the chief authority in the dark ages. It is even found in Alcuin, to whom so much is due; and it gave way very gradually in the revival of literature. In some of the monastic foundations, especially in that of Isidore, though himself a man of considerable learning, the perusal of the heathen authors was prohibited."⁴⁷ The tenacity of the clergy for the Latin liturgy and sacred writings preserved grammatical learning while it did not suppress superstition.

Prof. Cross, of Yale,⁴⁸ points out instances of reversion and survival of the oscillations between romance and realism. The novel growing by selection, rejection, addition and modification.

So words and their uses develop, decay and resolve into new combinations subject to the law of survival of the fittest. Language changes while literature tries to fix it and succeeds to some extent and the writings of great authors help largely in this, the styles of authorship and what will be popular reading likewise undergo development, retrogradation and reappearance in different forms.

⁴⁷ Hallam, *Op. Cit.*, pt. 1, Vol. I, Ch. I.

⁴⁸ *The Development of the English Novel.*

The dawning of history is comparable to the fifth-year dawn of memory in the child, the awakening of consciousness that can be remembered.

Analogy would indicate that the race can record the first boasts of its kings, the means of trickery by its priests, finally its commerce and history, and later a literature of science, art and fiction, so the human being in childhood awakes to brain records of events, recalls its sports and exploits and eventually the intellectual consciousness may, but does not always, grow more acute and active. The brain may be said to begin permanent special records at the memory age where impressions were merely general before.

The step by step progress of inventions, discoveries and of intelligence can be realized in the building up of the printers' art from block letters to its present enormous state of development.

The invention of paper to replace parchment and the desire to be able to avoid employing a secretary for private correspondence led to more extensive literary polish. The earliest linen paper letter is mentioned by Mabillon as one from Joinville to St. Louis, older than 1770. Cotton paper later became more general

We test the correctness of our spelling by scrutinizing the written word to "see whether it looks right," so it is a hieroglyph after all and any other sort of symbol would answer as well if committed to memory. Our letters seem to afford us a more convenient means of creating symbols that stand for words, but they are mere approximations when we consider the vast difference between the spelling and pronunciation acquired by some words.

We learn everything as symbols, we read the expressions on the faces of others as heiroglyphics standing for certain moods, and are often mistaken, just as we are in words made of letters.

We cannot and do not try to analyze what we see or hear into components when we observe or listen ordinarily, life is too short for any such attempt. We grasp the whole idea, more or less correctly in the single view or sound, just as the Chinaman reads his marks and the phonograph diaphragm gathers together the complex vibrations of the line into a familiar sound which our

auditory nerve then translates into other vibrations, and the brain center recognizes these vibrations as standing for a certain idea or memory.

Müller cites the vocabulary of the Tagan Fuegians of 30,000 words against the small number of words and ideas in the ordinary vocabulary of the English peasant as evidence against the Fuegians having savage ancestry. The savage may have an absurd number of useless words to express an idea which the peasant can make known by one word.

In the Sanskrit and Persian there are words scarcely needing translation into English; they are pader, mader, sunu, dokhter, brader, manp, eyeumen, the eye, brouwa, the eyebrow, nasa, the nose, hrti, the heart, stara a star, arrivi a river, ghau, a cow, sarpam, a serpent. In Persian we have the explanation of behter or the comparative better having originated from the positive beh or good, which latter word we lost while retaining the other.

Müller mentions the Oxford dictionary as containing 250,000 words, which, with ten changes by declination, conjugation or degrees of comparison, you have in English alone two and a half million words, but a poet is very eloquent who uses 10,000 words; he then digresses to note the 30,000 or more used by some savages, of which we may say the multitude are useless, and in the fifth century Sanskrit was analyzed into 2,000 roots, but by Müller's closer scrutiny he cuts these down to 800, and these sounds became the signs not only of emotions, but of concepts, for all roots are expressive of concepts, as that milk, snow and chalk are white. He says that in some cases a concept is a mere shadow of a number of percepts, as when we speak of oaks, beeches and firs as trees, but suppose we had no such names as black, white and tree, where would the concept be? If we examine these 800 roots carefully we find they do not represent an equal number of concepts. There are, for instance, about seventeen roots, all meaning to plait, to weave, to sew, to bind, to unite; about thirty roots, all meaning to crush, to pound, to destroy, to waste, to rub, to smooth; about seventeen meaning to cut, to divide, and so on. He believes the original meaning of roots was always special, but became generalized by usage, though certain generalized became specialized also. So he re-

duces the 800 roots to 121 concepts, which are the rivers that feed the whole ocean of thought and speech.

CHAPTER IX.

HUNGER AND LOVE.

The amount and kind of food attainable not only affects the size of the animal but also determines and modifies vital functions. A hydroid medusa can be induced by lack of nourishment to assume the polyp form, that is revert to or degenerate into the larval form of the species,¹ Hunter changed the stomach of a gull into a gizzard by a change of food.² Some woodpeckers accidentally found sap of a nourishing nature in holes they bored to get at insects, and sap finally became the object instead of the incident of their search and the sap-sucker species was created. Bee-eaters are a family of picarian birds, the sexes being alike in color, and this liking for bees must have been acquired. While owls have become night prowlers by evolution, burrowing owls get their food in the day time. They live often in a marmot burrow with snakes and feed on the young marmots. The Mexican tree porcupines are not known to drink water. Some animals are great feeders and others consume very little food. The horned lizard is a small feeder and is capable of long fasts and is supposed never to drink. But an insect that did not eat at all would seem to be impossible were it not that the May-fly lives but a few days and has no mouth. Its larvæ feed on minute plants and are free swimmers. Their evolution seems to be arrested by faulty development. Among apparent caprices of feeding it is said that at Aden the natives can swim in the open sea without fear of sharks when a European would be instantly devoured. This suggests the alleged instance of wolves refusing to eat the corpses of the Mexican soldiers during the war of the United States with Mexico, while the American soldiers were always eaten, the reason being found in the saturation of the Mexicans with their favorite red pepper addition to all their dishes. The Russian

¹ Hincks, Allman and Schneider, Semper, p. 66.

² Semper, p. 68.

wolves are less particular for they tear to pieces and try to eat anything thrown to them by persons trying to escape from them and they instantly devour one of their own number when wounded. The wolf is not very particular as to his feed; mice, frogs, buds of trees or lichens go to supply his ravenous capacity. Lions are not very choice in their eating as they will feast upon flesh in advanced stages of decomposition. The aard wolf, a degenerate hyena, lives on carrion and termites. The cheek pouches of monkeys are developed through necessity of holding large quantities of food till ready for digestion later, enabling hurried gathering and subsequent leisurely eating. The Kaola is a cheek-pouched animal. Most animals in Kamschatka live on fish and so the environment determines the kind of animals that will survive there, such animals as could not adjust to a fish diet had to leave the country or perish. The fishing cat habitat is from southern India to China, but its diet is not exclusive for this fierce animal destroys and eats sheep or infants, snakes or molluscs. The baboon is an impartial gourmand and eats anything from insects to fruit. Our remote several-times-removed uncles the lemurs are more omnivorous than we are. They are essentially night prowlers and live in forests, on leaves, fruits, insects, reptiles, birds' eggs and the birds themselves. The black bear is growing more carnivorous and appears to be dissatisfied with a diet of herbs and destroys more than he eats. Bears are generally fond of honey and risk bee stings bravely in getting at it. When meat fails the grizzly feeds on berries, acorns, nuts, etc. In Europe the brown bear kills and eats cattle but in the Himalayas insects and vegetables are its food, unless it happens upon a carcass. In Kamschatka it subsists upon salmon. The polar bear eats sea weed, grasses, lichens as well as flesh. Crab eating macaques have a wide distribution. The sloth has remarkable ability to survive injury and poison eating. It may also fast for a month without trouble. It is like the reptiles in being lowly organized in such respects. It expends little energy and hence is less sensitive and needs less fuel for its mechanism to work upon. Equivalent to human addictions such as tobacco, liquor, and hash-eesh all members of the cat family have a great relish for catnip, whether lions, tigers, leopards or pumas. The domestic cat is

attracted by valerian and enjoys its odor immensely. Most vampires are not blood-suckers, but two species are now known to be such. Darwin caught one in the act of sucking blood from a horse. Blood-sucking mosquitoes are well known. Robber flies suck other insects dry. Pressed by hunger locusts eat plants they ordinarily avoid and devour their own dead or even go so far as to eat their own larvæ. Snakes feed upon lesser snakes, in obedience to the widely applicable law of eating animals that can not eat you. The climbing snakes of Europe feed on voles and mice, and incidentally they thus benefit farmers: Pythons crush their victims, cover them with saliva and, when gorging themselves, are easily killed. Lizards are either herbivorous or insectivorous. Armadilloes crush snakes and eat them. Sea anemones are carnivorous. The microscopical rotifer whips its cilia around to draw food to its mouth. The majority of eagles kill their own prey, but few refuse to eat what is found dead, and some eat carrion. The golden eagle hunts rabbits in pairs, one is reserved to watch for a departure from the course and pounces on the rabbit when he escapes, the other eagle follows him closely. Mr. Hume, a naturalist, says that in India the imperial eagle is a foul feeder and a coward, even crows have whipped him. Birds of paradise are omnivorous. The shoveller duck of India is equally at home in foul or fair pools and feeds on everything whether nice or nasty. A family of perching birds feed on honey from flowers of the gum and other trees in Australia, by means of a long extensile tongue. The rhinoceros hornbill catches food on the end of its bill and tosses it in the air and catches it in its mouth. The New Zealand Ka-Ka parrot kills sheep for food and eats their kidneys. The raven is a scavenger but attacks weak lambs or feeble fawns. Crows live upon carcasses and droppings, especially the carrion crow. The rook eats insects but plunders cornfields. Petrels are the "sea-vultures," when an animal is killed numbers of petrels appear as by magic and gorge themselves till they cannot fly and they fight for the first bite, disgorging an evil smelling oily fluid if disturbed. A cormorant gorges a live eel but a stork shakes it to death first. Martens are blood thirsty and kill more than they devour. The nut cracker examines and cracks nuts to eat. Birds' eggs and young of other birds are ab-

sorbed by the destructive jay. Piping crows of Australia eat great quantities of grass-hoppers. The spoon-beaked sturgeon probably feels for its prey, as its eyes are small. The parrot-fish with horny beaks are able to browse on the coral polyps without being stung by their stinging cells. File-fishes feed on corals and molluscs, by means of strong incisors. Fishes may be vegetarian or carnivorous, but the mud-fish of Africa devour everything given them that they can swallow, and then kill and eat each other. They have peculiar limbs on each side and come to the surface to breathe.

Oxygen, whether derived from the air or the water, is a food, and a very necessary one. In low forms of life oxygen is absorbed by the same channels that take in and assimilate all other food. Even in some early fish forms, without lungs or gills, such as the *Cobitis fossilis*, the air was separated from the water in the intestines. The swimming bladder is a rudimentary lung, and by becoming more and more vascular the air in contact with the blood vessels of that bladder yields oxygen, and the gill and lung methods of breathing become rivals for affording oxygenation of the blood. In the lung-fishes the air bladder is elongated and performs the function of a lung; the mudfish comes to the surface to breathe as do water mammals, these and air breathers take in and let out air at the surface of the water, and drown if kept under, while others habituated to water breathing will perish in the air, though some can live in either air or water. The mudfish dies out of the air. The siren salamander has external gills but can also breathe wholly by lungs, this form has no hind-limbs and looks like a snake. It is torpid from October to April. The hell-bender, or Mississippi salamander, has been seen to blow air from its lungs over its gills to oxygenate the latter. If the mouth of a frog is kept open it cannot breathe, and dies of suffocation, comparable to the dependence of a horse upon its nostrils through which it breathes; paralysis of a horse's nostrils means suffocation. Serpent heads, torpid in hard mud in the dry season, are amphibious, and live either on the ground in the air, or get their oxygen direct from the water. When embryo fish have gills which they shed upon developing into lung animals the pseudo-branchial remains of the gills, become a mere plexus of

blood vessels. I advanced the idea that the thyroid gland, tonsils and thymus gland were probably remains of the external and internal gills of the fish embryonal stage of man, when the fish cardinal vascular system occurs, and the pleura covers these glands in development. Occasionally gill slits may persist in man in the unsightly branchial fistulæ, or slits in the neck. The embryo of man has well defined gill slits with other animals.³

As the roots of plants grow towards their food so the amœba and other protozoa are attracted to their sustenance. If what is eaten is chemically converted by the intestinal cells certainly chemical attraction exists in those regions, and undeniable chemical processes take place in the building up of blood, bone, cartilage, muscle, nerve, brain and other tissues; then ultimately hunger is chemical attraction and we merely recognize it in consciousness. The seed of the plant gets its chemical nourishment from the soil, air and water, and these are to the plant what organic compounds, as meat and vegetables, with inorganic air and water, are to the animal, and the chemical absorption from the circulation and tissues of what is needed to build the embryo is similarly supplied to the seed by the soil in its development into a plant. Cuvier likens the intestines of animals to a reservoir from which nutriment is drawn for the system, as animals move about and plants remain stationary and do not need such a reservoir. Huxley holds to the identity of animals with plants.⁴ The entire muscular, nervous and other apparatus of life that enables movement is evolved because it enables the animal to obtain things to put in its stomach and looking over the teeming populations, especially Asiatic, African and Polynesian, most human beings merely vegetate, exist with little if any motive or aim in life. The Hindoo and lizard bask in the sun and doze. When hunger is appeased inactivity, both bodily and mental, again follows. Most animals and men appear not only to eat to live but to live to eat. And several million people die off yearly through famine. Small vicissitudes of nature, such as the failure of rains, through forests being cut off from mountains, a bubonic plague, the diversion of the Yellow river of China a thousand

³ Comparative Physiology and Psychology, 1883.

⁴ Popular Science Monthly, Vol. VIII, p. 656.

miles or so in its cutting a new channel and drowning or starving out multitudes, may reduce populations rapidly. India underwent famines in 1896, '97, '99, 1900, Russia in 1899 and China in 1901, among recent instances, while unnumbered pestilences and famines had previously afflicted these countries.

Men and animals eat what they can get, and custom, superstition and habit affect their ideas of what is and what is not to be eaten. Chinese cooking does not often agree with the white man's stomach; we are repelled from rats, snakes, lizards and carrion, as articles of diet. Horses, frog legs and snails have been gradually popularized as food since the Franco-Prussian and South African wars. Gradual toleration is acquired for such things as liquors, cocoa, limburger cheese, coffee, tea, hasheesh and opium. The craving for some of these, such as alcoholics and opium, is an acquired hunger to which the intestinal cells, including those of the stomach particularly, have become habituated and adjusted, until great suffering occurs from the privation of such poisons. In North Carolina there are people who delight in eating clay in which there appears to be a small amount of fossil plant and animal substances. The perversion of a basic function, such as eating, is paralleled by sexual perversion.

Swift remarks that "the stoical scheme of supplying our wants by lopping off our desires is like cutting off our feet whenever we want shoes." Like any other comparison too much can be made of it. It is not well to let our feet carry us where they will. We have brains as well as feet to regulate their going and coming, but it is not given to every one to master himself. Pernicious desires, such as for liquors, should be avoided and suppressed if possible, but when fastened should be considered as due to disease, and the sufferer should be aided in recovery instead of punished, as society is inclined to do.

Some of the mechanical relations of the feeling of hunger are observed in the fact that by "sinching," or making the belt around the waist tighter, hunger may be temporarily appeased; it appears to induce a feeling similar to that of fullness or repletion. Then the dependence of the bodily and mental functions upon plenty of water circulating all over the system is seen in the fact that most of our weight is in water that fills the tissues,

and further when crossing a hot desert there is at first great depression and languor, and if the water that is rapidly evaporated from the body is not promptly resupplied frenzy follows with chatter about drinking, and imagining that water and beer is being drunk. This suggests that in other forms of insanity there may be hygroscopic faults in the brain and its ventricles and other channels for liquids.

The lowest animal may be conceived of as compelled to spend its entire time in securing a bare subsistence, and when starvation assails a human being he is practically reduced to a similar necessity. His mechanism for obtaining food may be more complex, but when out of his environment this superadded structure merely adds to his agony, and so the highest and lowest animals may be placed upon the same plane in the struggle for existence.

The processes of digestion normally take place without making us aware of them; disease may change this so that we become conscious that something is going on in our stomach or other viscera. Undoubtedly there are centers in the brain connected with the abdominal organs, though as yet their demonstration is imperfect. There are some instances of complete loss of appetite after a head injury, and this could be from suppression of the visceral center function in the brain.

The food desire is connected with special sense centres in the brain. The call to meals causes the worst demented in an asylum to scramble to their feet and rush to the table, showing that auditory associations are all-powerful as reminders of the eating functions. Snails can be trained to know the voice that calls them to eat and respond to it promptly. Sights and odors are most closely associated with the eating faculty and desires. My hippocampal theory is worth mentioning at this point.⁵ The hippocampus major can be safely assumed as directly connecting the olfactory or smelling sense with the centres for moving the eating organs, such as the lips, tongue, jaws. Early mammals or reptiles dependent upon the smelling sense for food discrimination would certainly in time have massive strands of nerve fibres connecting the smelling sense nerve roots with the brain portions devoted to mastication and deglutition, chewing and swallowing.

⁵ Comparative Physiology and Psychology, 1883.

for smell was the main guide to every step of its eating processes. The large bundle of fibres that proceeds from the olactory nerve root, and curves around the side of the ventricles in a sickle shape, could readily have served this purpose. But in animals that have learned to depend, to a greater or less extent, upon vision, as to whether the food should be eaten and how it is to be eaten, the smelling sense is of less importance, and in the simian family the higher we approach to man we find the smelling sense growing feebler and the optic sense stronger. The hippocampus minor or calcar avis is found in these latter animals, and is the largest in man, which can be interpreted as associating the optic faculty with the hippocampal fibres that pass forward to the gustatory centres that were once controlled by the olfactory fibres. The hippocampus major is still large and the hippocampus minor is small, but this is accounted for by the former having been built up through millions of years of prehuman existence, while the hippocampus minor is representative of the period when in the evolution of man he and his progenitors have relied upon eyesight more than smelling when they sought food or ate it.

The earliest desire being for food the organs concerned in its reception and elaboration would be where desire for food makes itself manifest; the stomach and intestinal conditions acquaint us with hunger and thirst or repletion, and the nerves running to the brain from these parts merely notify consciousness of these states. Hunger is not in the brain, it is in the abdomen, but the consciousness of hunger is in the brain, and the higher reflex centers are situated there as an evolution of the better and still better hunger appeasing processes, those motions best adapted to getting food in all the multitudinous ways animals and men have developed.

Clouston of Edinburgh suggested that alcohol was often craved when it was a misinterpretation of some other physiological desire that was really concerned. The passage of a urinary calculus can cause great pain and a distended colon or bladder may arouse a general congested feeling with attempts at relief of other than the real organ involved. This sort of misconstruction reminds one of the lines in Tom Hood's *Rae Wilson*, in

which he mentions the self-elected saint feeling pious when he was only bilious.

Hunger is the earliest desire and is inherited and constructed from the attractions of atoms for atoms and molecules which go to make up the living cells. All acquisitive desires and faculties are derived from and based upon hunger. As money is merely representative wealth, and no wealth is desirable in the absence of food, a tentative location of acquisitiveness may be placed at the gustatory centers and the pneumogastric roots in the brain.

The dislike for food (anorexia) that occurs in melancholia is due to the want of tone of the intestinal tract with the poisons that are generated and retained in the stomach, fresh food lying undigested and adding to the distress and the weakened brain misinterprets bad sensations as due to persecution. The entire body loathes food in this instance just as the entire body participates in an orgasm and for comparable reasons. The hunger of pregnancy is owing to the added necessity for food to build up the new organism superimposed upon the mother, and sometimes the system cannot properly interpret the demands made upon it and in some pregnant women there are perversions of appetite in consequence.

An Indian can go days without eating, and starving sensationalists use a minimum of food taken secretly while pretending to take none at all, a common trick of hysterical notoriety-seekers. It is a fact that one can become blunted to hunger and not suffer as much as at first and in the last stages of starvation all desire for food disappears. Repression of the sexual function would be more possible in the aged and less possible in the young, particularly when living on good food. Rich food and wines would render suppression in a young adult next to impossible.

Hunger concerns the enteric and every other cell in the body that is nourished and varies according to cellular needs. The assimilative attraction of organic and inorganic substances to cells as food necessarily involved a growth, and incidentally excretion of such materials as could not be taken into the cellular organism. So eating, growth and excretion were the first faculties evolved from chemical affinities in living organisms, and

when a growing cell splits into two or more cells, then reproduction appeared. Contractility is merely assimilative motion, the primitive object of all animal motion being assimilative. Irritability and automatism are motilities derived from the assimilative. The secretory is merely another term for excretory metabolism following assimilation. Materials excreted by one cell or set of cells, such as an organ, may be adapted as food for another set of cells, or some of the excreted compounds may be selected by the cells until finally completely excreted. The respiratory process is an assimilative one. The muscles and nervous system are built primarily upon the ingestive tube, and the vascular and lymphatic systems are also appendages of the intestines, so we have the enteric tract first developed. Nutrient channels are the intestines, lymphatics, arteries and veins. These supply the other cells of the body with food, and reciprocally the limbs and jaws contribute to the procuring of food. Hence in the evolution of the body the intestines stand first; next is the blood vessel system, then the locomotor apparatus. The sense organs arise from the tactile. The limbs develop the jaw, demonstrably in lobsters and crabs, and are built upon the enteric development. Innervation of the eating canal precedes all other innervation, necessarily, for it is the earliest and most important means of correlating the lowest life functions. As the eating, growing, excreting and reproductive faculties are the earliest and most general they are very tenacious and the last processes to become extinct. The breathing ability is a form of eating, for oxygen is a food, and a little spot called the vacuole that appears in any part of the *amoeba*, a spot that enlarges and bursts, is the early forerunner of respiration through a fixed organ such as gills or lungs. This vacuole contains the gases generated by assimilation, to be excreted, as carbonic acid, etc., the oxygen being absorbed by all parts of the animal, therefore the vacuole is expiratory and performs only the exhaling function and so is the representative of the lung in the excretory sense only. The lowest animal moves, eats, excretes and reproduces. Differentiation of organs enables these movements and functions to be more definite, but even to the highest animal these are the main accomplishments of existence. The correlation of these functions

is obtained through a highly organized relating nervous system, rendering the movements more intelligent in man and other higher animals.

No sooner are young turtles hatched than myriads of them fall victims to land crabs and sea birds, while when they reach the sea fishes destroy them. During the breeding season the males fight and the disabled ones are seized by sharks. The association of hunger with love, primarily, will appear later in this chapter.

The anolis lizard males are extremely jealous and fight till one loses his tail which is the sign of defeat and this probably reduces his value in the eyes of the female. Woodcocks skulk until love makes them bold when they fight for mates. Male chaffinches are furiously jealous of rivals. Cock birds fight in spring to June. The ruff (*Totanus pugnax*), another of the plover tribe, is remarkable for the males forming ruffs around their necks periodically, and these ruffs seldom are twice alike, being also variable at the same season. Very pugnacious are the cocks and they differ from all their kin in being polygamous, the females largely exceeding the males in number. The males fight French duels for possession of the females. The mute swan nests in May when the male is extremely belligerent. Mr. Jenner Weir finds that all male birds with rich or strongly characterized plumage are more quarrelsome than the dull colored species belonging to the same groups. The gold finch for instance is far more pugnacious than the linnet and the blackbird than the thrush, and seasonal changes cause pugnacity when gaily ornamented. Brilliantly colored parrots have bad tempers. The salmon males fight fiercely with one another in attending the females when spawning. When a stickleback fish is conquered in sex fight his gallant bearing is over, his gay colors fade and he hides his disgrace, but is for some time the constant object of his conqueror's persecution. Male salmon and trout are great fighters, two male salmon have been seen to fight all day, the males are constantly fighting and tearing each other in the spawning beds and injure each other so as to cause many deaths, exhaustion and dying states. In the breeding season the lower jaw of the male changes to a hook-like projection for fighting. Sea

lions have pitched battles for mates. Eared seals are polygamous and the males are the larger. Old males wait at the "rookeries" and wage war for the females, the strongest get the largest number of females, usually ten to fifteen, and they fast to guard their harems several weeks. An old sea bear in a similar fight to build up his harem, favored by a single path of access and a sort of fortified situation, had forty-five of the gentle females. Darwin's law of battle⁶ or fighting for females is nearly universal. Even the kangaroo males, otherwise harmless, engage in fierce contests during the pairing season.

Women are constantly the cause of war in the same tribe or between different tribes. The Indians of North America have a regular system of battle, men wrestle for women and the strongest gets her, so the youths constantly practice wrestling.⁷ Hot blooded southern races are apt to imitate animals in their fights or battles for love, but in jealousy among Northern people there is apt to be less bloody results.

The season of love among birds and other animals is that of battle. It does not appear that females prefer the victor. Kowalevsky says the female capercailzie will sometimes steal away with a young male who has not dared to enter the arena with the older cocks. If the law of battle or any other performance becomes the settled method among a species by which mating should occur then departures from that rule would practically amount to bird or other animal immorality, it is sexual preference acted upon in defiance of conventional rules, intriguing and violation of social laws. It is probable that sparrows condemn Lotharios to death by a court resembling the old Saxon hundred court, and then appoint an executioner who may be an aggrieved party. The red deer of Scotland are distracted by wandering males trying to disturb the peace of mated pairs. The battles of knights errant were often for lady loves. Darwin notes that the victors in animal battles are not always attractive, for other matters than prowess are factors, such as song and colors. Sham battles are sometimes engaged in like the contests of oratory, foot ball, etc., of human competitors. Voices appear to have the

⁶ Descent of Man, Vol. I, p. 228.

⁷ Descent of Man, Chas. Darwin, Vol. I, pp. 308, et seq.

double primary function of frightening rivals or enemies and for making love. The rivalry is competitive, the ambition is to achieve excellence, the love of approbation is seen in matching birds to sing when one may drop dead from rupturing a blood vessel in the lungs in trying to sing loudest and longest.⁸ Vocal and instrumental sounds so commonly serve as a love call or love charm that the power producing them Darwin thinks was probably first developed in connection with propagation of the species. He notes that the male stickleback (*Gasterosteus leisurus*) is mad with delight when the female comes out and surveys the nest he has made for her. He darts around her in every direction and tries to push her with his snout and pull her by the tail and side spines to the nest. Love handicaps birds with heavy plumage and makes them conspicuous to their enemies, a consciousness of which develops shyness. The presence of a female true cuckoo excites the interest of more than one male. She utters a kwik, wik, wik, and attracts all the males who quarrel and fight. During the love season the double call cuc, cuc, koo, is heard as if the male were trembling with passion. They are polyandrous and the females do the courting.

The robber flies (*Asilidæ*) feed upon other insects by sucking them dry and the males take advantage of the female being engaged in a repast to approach the female, otherwise he might be emptied of his liquid contents. This may be but an impartial appetite such as enables animals to eat their young but there are other cannibalistic acts associated directly with sexual ardor to which I called attention in 1881.⁹

Dog females bestow their affections and are not always prudent in their loves and are apt to fling themselves away on curs of low degree. If reared with the vulgar an affection may spring up which nothing can subdue.¹⁰ The Chinese Sunday schools with white women teachers and the negro or other coachman too often in company of the heiress occasionally exhibit the power of propinquity. Darwin holds that female dogs are attracted by

⁸ Op. Cit., Vol. II, pp. 47 to 50.

⁹ Comparative Physiology and Psychology, 1883.

¹⁰ Mayhew, quoted by Darwin, Op. Cit., p. 258.

large sized males¹¹ but it is rare for a male to refuse any female dog. Dogs form decided preferences for each other being often influenced by size, bright color and individual character, as well as by the degree of their previous familiarity. Stallions are capricious, rejecting one mare and taking to another without apparent cause. Some mares have been known to reject a horse. Sows reject one boar and prefer others, cows also refuse certain bulls, as, for instance, a Jersey may not like a Holstein. Darwin notes that most female fish are larger than the male and the males suffer from their small size for they are liable to be devoured by the females of their own species. The larger size of the female doubtless enables production of large quantities of ova. In many cases the male alone has bright colors and has ornamented appendages, and when they are young males resemble adult females. In a siluroid fish of South America, the *Plecotomas barbatus*, the male has a beard of stiff hair, which is absent in the female. With fishes there is a close relation between their colors and sexual functions, and organs and colors may develop during the breeding season; the males are ardent in courtship and often fight desperately with each other. The higher ornamented males appear to urge their selection by the females.¹²

Breeders incline to think that the male of quadrupeds accepts any female, but it is doubtful if the female accepts any male, on the contrary, she often rejects the male. The capture of wives by the eared seals is narrated¹³ as gentle at first and later fierce in manner. The male seal recognizes the value of, what is not exclusively human, obsequiousness and winning ways, until there is no further occasion for them, when the brute nature of seals and man may then assert itself in gruffness and severity. Night jar females exert the choice and when it is made other males are driven off. Among pheasants there is caprice in all attachments. The pea hen is most excited by the male that pleases her by brilliance, melody or gallantry.¹⁴ The general effect is what determines the choice as with human beings. Magpies console them-

¹¹ Op. Cit., p. 258.

¹² Op. Cit., p. 7.

¹³ Op. Cit., p. 257.

¹⁴ Op. Cit., pp. 111, 118.

selves rapidly with new mates when the old ones die. Owls also, according to White of Selborne, and sparrows, chaffinches, nightingales and redstarts. The sitting widow soon gives effectual notice that she is forlorn. An instance is given¹⁵ of a starling consoling itself with a new mate three times in one day when the others were shot. Birds in the same cage do not always mate, so mere nearness is only one among several factors in mating, and birds of the same sex may sometimes live together occasionally, even in triplets, as with starlings, carrion crows, parrots and quails. With the latter there have been combinations of two females and one male, and one female and two males.¹⁶ Some macaws with harsh voices have bad taste in sound and color attraction, as through association had reconciled them to defects, modifying the æsthetic by the sexual ardor. The grouse indulges in courtship antics, and makes a drumming noise with its feathers. Darwin observes that the diversity of sounds used as means of courtship is remarkable. He describes the antics of the remarkable bower birds of Australia who collect museums of shells, bones, feathers and leaves to display as wealth to attract mates. So the idea of property possession is united with vanity in courtship, the display of plumage of birds and other evidences of great vanity is mentioned. A naval officer who had been shipwrecked in the Pacific Ocean on a small island frequented by penguins says that the salacity of those birds is surprising. The common eel is notorious for intertwining apposition in direct conjugation, a rather surprising inclination, when we consider the spawning without contact of fish in general, even though many fish indulge in the chase while some, as the trout, are quite gentlemanly, considerate and modest, following the female at a respectful distance. The bream female is followed by three or four admirers when she is ready to spawn.

J. M. Aldrich, a naturalist,¹⁷ describes courtship among the flies, the reluctance of females and ardor and persistence of the male with display of his attractions. Newts are like fishes in breeding without direct union. The females seize the lumps of

¹⁵ *Op. Cit.*, p. 101.

¹⁶ *Op. Cit.*, p. 102.

¹⁷ *American Naturalist*, Jan. 1894, p. 35.

spermatozoa and convey them to their reproductive organs.¹⁸ It is difficult to trace inducements to this sort of propagation to anything allied to methods of higher animals, but the connection necessarily exists. If the females of the fish left their ova to be fertilized by the first male who came it would not favor sexual selection, but the female never willingly spawns except in the close presence of a male and the male never fertilizes the ova except in the close presence of the female. The males of certain South American and Ceylon fishes hatch eggs within their mouths or gills, laid there by the females. In the pipe fish, Hippocampus, etc., there are marsupial sacks or depressions on the abdomen of males in which eggs are laid by the female and are there hatched. The males show great attachment to the young. The Surinam toad also has pits in its back in which its young are reared. The sexes look alike in some birds, as true bulbuls, in plumage. Birds of Paradise plumage appears to be an extravagant result of sexual selection. They have dancing parties to parade themselves. The birds of the genus *Rupicola* are brilliantly colored. The genus *Solenostoma* is exceptional in the female being more brightly colored than the male and birds are occasionally inverted, the males have selected in such cases the more attractive females instead of the females selecting the males. Snake males are always smaller than females and have more pronounced colors. They have odoriferous glands to attract females. While male snakes are amorous they are not known to fight from rivalry. Lizards have sexual throat pouches and wattles which become erected in excitement. The anolis male is crested. The grouse has a sexual throat pouch. The male Triton has bright colors during courtship. The crest of the crested seal is presumed to be a sexual feature, like the antlers of a deer, as the males only are crested.

Darwin¹⁹ discusses beards, especially those of monkeys, as being sexual appendages; often the head of hair assumes queer shapes. While the popular ideas are that animals are indiscriminate, such is far from being the case universally. Lions pair for life and have two to six cubs at a birth in captivity. The Wan-

¹⁸ Lydeker's Natural History, Vol. V, p. 290.

¹⁹ Descent of Man, Vol. I, p. 270.

deroo monkey is monogamous. The tigers consort in pairs, but for how long is unknown. Gray seals associate in pairs, while the eared seals are polygamous, and the causes of polygamy among seals are mentioned as due to natural causes.²⁰

The long-beaked bustard differs from the common bustard in being polygamous and during the breeding season the males make attractive display before the females.

Minnows are polyandrous and true cuckoos are the same, the female doing all the courting.

In the present association of the sexes of human beings, all the different methods mentioned in a previous chapter may still be found to exist today, as well as the Thibetan strange custom of polyandry where one woman may have several husbands. Dr. Cook says that the West Australians, California Indians and the Santals of India pair like the beasts of the field and the birds of the forest,²¹ and that "among the natives of Northwest Greenland coast the genital sense is decidedly periodical. There is a grand annual outbreak of ardor after the return of the sun. It comes with such force and takes them with such suddenness that they frequently quiver with passion for several days. This culminates during the first summer days in what may be called an epidemic of venery when marital exchanges are made with seeming grace and good intentions."²²

An Arabian tribe marries for so many days in the week, commonly for days during which the wife must be faithful, but on the other days she may do as she pleases. Unfaithfulness in some hill tribes of India in the male is a grave offense, but is regarded as trivial when the wife is unfaithful. The Tartar wife thinks she must be abused by the husband or she is not liked, and it is a query if the Formorian Turanians introduced this idea into Hibernia. Among the Basques the father goes to bed when his infant is born and the wife goes to her work. Other peculiar beliefs and customs are described by Herbert Spencer.²³ Monogamy, polygamy, etc., are products of the periods and circumstances in

²⁰ American Naturalist, Feb. 1891, p. 103.

²¹ Quoting Westermarck, History of Human Marriage, p. 28.

²² F. A. Cook, American Anthropologist, Vol. XI, p. 230.

²³ Study of Sociology, p. 135.

which they arise. Wars could be followed by polygamy when it did not previously exist, and polyandry could arise in a country where many female children were destroyed at birth. What might be regarded as the best interests of an animal, man, race, people at one time might be considered as detrimental later, so promiscuity, polyandry and finally monogamy became best suited to the interests of a race. Certainly monogamous races are superior to others. Interbreeding is destructive of advance and has caused primitive arrest of development and degeneracy. Saadi of Persia in "The Gulistan" laid it down as a rule that a young woman cannot love an old man, but a seventy-five-year-old celebrity in 1902 won a twenty-one-year-old bride and she brought him several million dollars, so money in this case was not a factor, and occasional instances of this kind go to show that a rule has exceptions. Then Lady Burdett Coutts in her old age married her secretary, a young man, and she certainly did not marry him for his money, for she had an abundance herself. Too frequently unhappiness follows such mating. Edward III, when old, and Alice Perrers, the young beauty, lived very happily together. The king denied her nothing and she robbed him on his death bed. Love birds are little parrots that are greatly attached to each other, but there is no truth in the story of one dying of grief over the loss of a mate. They quarrel and bicker with each other in true marital style. A gander and goose were so fond of each other that separation once nearly killed them, and their reunion was affecting; they crossed necks, gabbled and caressed for hours. Brehm regards the cuckoo as discontented, ill-conditioned, pessimistic and unamiable; its notes are abrupt and angry. Cuckoos jealously guard their territorial preserves and justify the supposition that they are sparrow hawks in disguise. Their parasitic character is in keeping with their general behavior; left on the thresholds of the houses of other birds they are waifs and Ishmaelites. The love impulse of such outcasts wane before those of hunger, and the starved, importunate young typify the adult.

"Wherever the king of love cometh the arm of piety has not power to resist him,"²⁴ and the complete overriding of the reason by the strong emotion is indicated in the observation that Cicero

²⁴ Saadi, Gulistan.

after his divorce from Tullia, when invited to another marriage, said that he could not be wise and in love at the same time. And that "love is blind," further, by its wide recognition points to there being nothing like it to cause self-deception, delusion and illusions. An ugly person when loved becomes beautiful, mean natures are glorified. There is a hyperbole of love that puts all one may do in the superlative degree; a glamour surrounds the loved one and the fetich spirit of worship is aroused, so that articles that are associated with the loved one are also fondled as reminders.

The complete subjection of the intellect to the emotion of love renders the wisest of persons captives to the little god. It may be possible for a great intellect to subdue an unreasonable attachment, but by an extraordinary effort associated with anguish. He might appear indifferent or even heartless, but in reality be controlling passion with judgment and the suffering undergone may be intense. Charles Reade remarks of one who "set his cool brains to hatch the eggs of love and wondered that the result was addled." When the first ardor of passion abates the associated and more intelligent causes of attachment are enjoyed, as companionship, community of tastes, conversation, etc., nor is the invariable waning of the honeymoon any proof of indifference, for let jealousy be aroused and there is a realization of the foundation of the affections. When there are so many unhappy marriages there could be an explanation of many of them as founded wholly upon impulse in defiance of reason. An inherited instinct older than reason and more deeply connected with every cell of the body by millions of years. The animal pranks of passion can thus be accounted for. A laundress in an insane asylum became infatuated with a lunatic, and to inform her of her danger I read the history record of the patient to her as that of a homicidal, alcoholic, irresponsible person who would not earn her a living and would spend what she earned recklessly. She insisted upon marrying the man.

Such ferocious animals as the gorilla are cruel in their manifestations of desires, and the occasional brutality of men, especially negroes, is a reversion to the primitive animal behavior. The lowest intelligence may violate the helpless, even in some

cases when swift punishment is known to surely follow. Another grade of intelligence falls into the divorce habit.

Many are the instances that would parallel that of the princess who gave up her right to the throne succession to run away with a gypsy outcast lover. But an attempt to cultivate affection or to ignore it altogether in a *mariage de convenance* may be defeated by a repugnance to certain things which real love would scarcely observe. The lady who refused the King of France because he did not wash his feet was evidently not infatuated. Races differ widely in their ideas of beauty, some preferring black or yellow skins, others the oval European face and fair skin, etc., and these ideals exert great influence on sexual selection. Schopenhauer regards the form and not the face as inspiring love, but often beauty of face may be coupled with that of form, though the form will attract whether the face is pretty or not. Wallace thought that Darwin's sexual selection ideas were faulty in regarding animals as choosing strength and courage, but we see in human beings that which with modifications is true of animals, it is a combination of several things going to make up a resulting attraction that urges the determinant, such as may enable a young woman to overlook age in the admiration of an intellect such as Chauncey Depew's.

"Dress often suggests more than it conceals" because what women consider as attractive to men they incline to cultivate and sometimes exaggerate. The narrow waist is persisted in, sometimes when the tight corset caused suffering and ill health, even though unsightly red noses, blotches and pimples follow upon obstructed digestion and may be known to result from the tight lacing, thus implying that Schopenhauer's notion was correct that the form rather than the face is the main attraction. Tight lacing gives a relatively large appearance to the hips, and in all ages this has been regarded as a female allurements. An African race of bushmen selected females for mates with the most ridiculously large hips, so large in fact that when one seated herself she could not rise without assistance. This condition was known as *steatopygia*. When clothing was adopted a change in attraction could occur from parts out of sight which would not be liable to sexual selection to other features not covered by clothing remaining in

sight. Darwin notes²⁵ that absence of hair on the body and its development on the face had much to do with sexual selection. A New Zealand proverb has it: "There is no woman for a hairy man."

That music is the most powerful impeller of love in females is more evident than that it influences males, though women are the most frequent musicians, and when they cease their piano practice after marriage they by doing so declare that their music was to get the beau, and that now it is not needed so much. Liszt, Paderewski and other long-haired, and sometimes unintellectual pianists have been actually beset by females who raved over them. At the Brooklyn, New York, Academy of Music, in January, 1902, Kubelic, the Bohemian violinist, was clawed over by a music-mad lot of women who prayed for a kiss or a single hair of his head. Hobson, the hero of Santiago, was also "hobsonized" by the girls till jealousy of other men put a stop to it. But this also shows that hero worship may centre upon some other things than musical ability. In either case the women have imperfectly controlled nervous systems and are emotional to a dangerous degree, particularly for their own welfare. This is an exhibition of admiration closely reversionary to that of birds and fishes, and hence not becoming in the higher ape life.

The loves of Goethe indicate the complex nature of the passion. He tired of his sweethearts as soon as they were won, and ceased to care for them, but chivalrously married one to whom he made no promises but by whom he had a child. Charitas and Kathchen of Leipsic, Frederica Brion, the daughter of the pastor of Sessenheim, a beautiful, simple country girl to whom he made fierce love. "To win a heart was rapture, to possess it when won, satiety." According to Goethe's own record, he suddenly awoke to a consciousness that "his love for Frederica is but a dream, and when he beholds her in contrast with city maids at Strasburg he realizes that the simple country maid is not fitted to be the life companion of the Goethe that is to be." Grimm says, "to have broken the heart of such a maiden was inhuman." Goethe thought little of her, did not answer her letters, and only sought a balm for his wounded conscience. Next was "Lotte," of the "Sorrows

²⁵ Descent of Man, Vol. II, p. 359.

of Werther." She was Charlotte the betrothed of Kestner, Goethe's friend. She was indifferent and he had the decency not to bother her, but wrote of suicide. The unattainable was charming. Thackeray wrote a parody on the "Sorrows of Werther," the verses ending with: "Then he blew his silly brains out and they placed him on a shutter. But like a well-conducted person she went on cutting bread and butter."

"Lili," Frau von Stein, and finally Christine, were the later ones.

In radical opposition to Goethe's method of loving there are men who could not stand the slightest rebuff or intimation that they were not liked, they would instantly give up the chase.

Dante was married to a notorious scold, and when he was in exile he had no desire to see her, although she was the mother of his six children. Shakespeare lost the sympathies of the world by marrying Anne Hathaway, a woman eight years his senior, who was coarse and ignorant. Lord Bacon enjoyed but little domestic bliss, and "loved not to be with his partner." Milton was not great in the character of husband and father. We read of him that his first wife was disgusted with his gloomy house, and soon ran away from him, and his daughters were left to grow up utterly neglected. Moliere was married to a wife who made him miserable, and Rousseau lived a most wretched life with his wife. Dryden "married discord in a noble wife," and Addison sold himself to a cross-grained old countess, who made him pay dearly for all she gave him. Steele, Sterne, Churchill, Coleridge, Byron and Shelley were all married unhappily, and Bulwer and Dickens have been known by all the world as indifferent husbands. Sir Walter Raleigh married a beautiful girl eighteen years his junior, and she adored him with increasing ardor to the very last. Dr. Johnson's wife was old enough to be his mother, but "he continued to be under the illusions of the wedding day until she died at the age of 64," he being only 43. Shelley's first marriage was unfortunate but his second was a model of happiness.

Gilbert à Beckett forgot his Saracen lady love, the one who helped him to escape, until she found him by means of the only two English words she knew, "London" and "Gilbert," which she repeated in her travels until she came to the city, and, finally,

to her lover. These were the parents of the strenuous and vain Thomas à Becket. Infatuation may be one-sided or mutual, sometimes chivalry pleads successfully where often wrong is done in other cases. American medical students in Vienna were constantly becoming entangled with the daughters of boarding house keepers and domestics; often these young men were away from home for the first time in their lives. Life-long consequences followed sometimes with paternal chilliness, but marriages were more frequent than desertions of sweethearts, as in the grissette customs of the Latin Quarter of Paris, among students from all countries.

The transient nature of the affection of Henry VIII of England was a phase of general hoggishness and his murderous career was consistent with his low nature generally. But even he tried to make a show of justification, and sought pretexts and excuses as did Nero.

The animality of a few has brought nations to slaughter, as when Darius was urged to war against Greece by Atrossa, who wished to have Grecian women for slaves. Hunger, lust and plunder moved tribe against tribe and caused migration and amalgamation, increase and decrease of population. The forays of wild animals were caused by hunger mostly, and the derived desires were added as incentives to movements of the human descendants of wild animals. The general grab instinct is at the root of all activity of races, however disguised.

Monogamy may be the recognized and conventional method of pairing in a country and in many cases be observed ostensibly but not in reality, and a sense of duty and circumstances may compel it in animals as well as man.

There are instances of constancy to the memory of a dead or even deserting spouse, of single love for lifetime and of extreme inconstancy in others. If acquired traits are transmissible, such as faithfulness, it is most likely to be the product of maturer marriages. For instance, if desirable traits are inheritable they are most likely to have been developed in riper years by both parents. The mating of the very young might result in offspring less likely to develop mental traits depending upon evolved brain states favored by later unions.

The extreme range of marital methods during the ages from promiscuity, incest to monogamy occurs among animals as well as man. Cleopatra became the wife of her younger brother Ptolemy, according to Egyptian custom. As to loving more than one person at a time we have the pretense of it at least in oriental harems, and one after another, or one at a time, in the instances of widowhood and remarriages. A Turk may find a saving of money and worry in following the civilized monogamous method. Undoubtedly occasional Mussulman wives have been too jealous to permit another wife in defiance of the prophet's teaching. With oriental, occidental, white, black, brown or yellow races alike, jealousy reigns. Ten thousand years ago in ancient Babylon the courts and harems were embroiled in intrigues and treachery, in faithlessness and jealousies. Shakespeare's lines were as applicable then as now, when he speaks of

"The venom clamors of a jealous woman

Poison more deadly than a mad dog's tooth."

The Hippocratic oath administered to physicians to raise them to a higher plane of skill and morality bound them to treat women with propriety.

Among the Pennsylvania and New Amsterdam Dutch settlers the practice of bundling, as mentioned by Washington Irving in *The Knickerbockers* and by other writers, appears to have prevailed, and being accepted as a custom no wrong could be seen in it. In fact in some localities unfruitfulness was a justification for terminating a courtship. Individual idiosyncracies are quite common in love relations, there are instances of complete repugnance of the basic exhibition associated with pure love. A gay Lothario who was beaten over the head with a club was thereafter impotent with any save his own wife. The mental impression rather than the physical beating working the change. Darwin in studying savage life claims that morality has been instituted by club law. Fear has much to do with decency and the habit once introduced can be intensified and finally inherited and become natural to certain descendants. Its absence in individuals can be due to atavism or reversion to primitive states, just as a case of idiocy can occur unexpectedly in a family.

The imagination and mental affinity at times are potent to

build up or influence ardent attachments. Admiration is largely concerned in attraction, the love of approbation and mutual admiration are inducements to affection and admiration can be built upon being admired by another. A lady used to defend herself from her husband's outbursts of anger by reading his old love letters aloud to him. He would say that he would like to have a large portrait, with explanatory footnotes and a glossary of the inside of his head when he wrote them. One letter mentioned the long bitter separation of twelve hours. The "stirpiculture" nonsense of the Oneida community, whereby a superior race was to be cultivated, died out in time. Its theory was debasing and would have resulted in a tribe of lunatics had not nature suppressed the free love degradation. Social theorists frequently start with some silly sexual revolutionary notion they try to foist upon their dupes. The Spartan physical endurance selective process resulted in nothing finally. Hogs, boars, horses, oxen and dogs may be bred by such methods, but intellects must descend from better ancestry if they are to improve, and even physical defects may be associated with higher intelligence, as in the cases of Gibbon, Poe, Tom Hood and Herbert Spencer.

Mules do not breed among themselves, although the female mule will occasionally produce offspring with the male horse or ass. Nor are hybrids mutually fertile between other members of the equine family. Among hybrid preferences Darwin²⁶ notes the blackbird and thrush and the black grouse and pheasant preferring one another, and cites instances of forsaking mates for strange and incongruous males, as a white lady Sunday school teacher being smitten with a Chinese pupil. Perverted tastes are common to animals and man in some degree and in isolated instances. A Wyoming ranchero tells of two male cats reducing a forlorn and weaker Thomas to perverted submission. Darwin further notes that strange attachments and antipathies are formed more often by female domesticated and sometimes wild animals. A bird fancier claims that when two male canaries are placed in a cage with a female mating will not occur until a male is withdrawn. The female dotteral is a plover larger and more brilliant than the male and this exception to the male being the more at-

²⁶ Op. Cit., p. 109.

tractive is associated with stupidity, for the dotteral is so named because the bird foolishly allows the approach of captors.

John D. Caton tells of the unnatural attachment of a wapiti deer and a Durham heifer.²⁷ The deer was raised with cattle and the heifer had not seen a bull. Both were equally attached with, of course, no impregnation. He also tells of a sand hill crane manifesting a great attraction for pigs which did not reciprocate the interest. A Hawaiian goose used to brood a couple of young pigs and protect them with fury, and they obeyed her orders without hesitation. Dudgeon, in *Nature*, subsequently reported the instance of a cat adopting five young rats.

Closely related to perversions are other physiological misconceptions, as when a stomach or liver irregular action induces alcohol or a narcotic to be taken. There are the perverted cravings of pregnancy and hysteria, in the latter associated with contortions and capricious behavior. When chalk is eaten by girls it has been compared to the craving of chickens for calcareous substances necessary to form their egg shells. This "pica," as the perverted craving is called, may be an indication as well that lime salts are needed in bone formation, but cravings for coals and slate pencils, with other absurd appetites are as frequent.

Woman has been property in all ages, her weakness invited the strong to capture her, just as the stronger subjugate the weak in all races, and regardless of sex. Where the woman was the stronger, either individually and exceptionally, she has been undisturbed, and in a matriarchate, or where woman are governors, it is through circumstances that cause her to be practically stronger. Masculinity and muscle being revered the woman is in the background. The folly of denying the female half of the race any position it is competent to fill appears in expecting to produce an exalted and a healthy minded progeny from a race partly enslaved. As intelligence increases the woman is permitted to earn her own living in formerly untried ways. Her freedom teaches us that she has many capabilities that were formerly ignored. Of course there are physiological impediments to women ever filling some positions now occupied by men, but instead of refusing women advancement for such reasons let her

²⁷ American Naturalist, Apr. 1883, p. 359.

try anything she desires in the way of work, and her fitness or unfitness will be demonstrated by natural selection. The reason woman is held inferior is because she had not the strength to assert herself, and for millions of years before humanity appeared our male animal ancestry, with occasional exceptions, have ruled the female. And where, as among some spiders, this was not the case the female spiders were the larger and stronger and prove the truth of my contention that the weakness of women has in Asiatic countries put her into harems, and only as intelligence and civilization advances can her masters grudgingly be induced to relinquish their control. In a few states of the American Union women suffrage has been enacted. No matter what the immediate results may be or how unfitted women may be to exercise the right to vote and to dispose of her own property, such legislation is a step in the right direction and eventually will produce results leading to a freer, more enlightened and a better race physically and mentally, though fears are expressed that priests may control the votes of their women parishioners.

Spanish and other Latin chaperonage shows how little confidence there was in entrusting portable and perishable property to its own care, and Anglo-Saxon countries where such espionage is minimized have more trust in the honor of men and innocence of girls, however misplaced at times such beliefs may prove. The bare fact that in America there is a freedom of intercourse between the young of both sexes with exceptional occasions for regret, and all sorts of restrictions are put upon meetings of males and females in Latin countries with the *Gil Blas* and *Decameron* results quite prevalent, tend to demonstrate differences in ideas and salacity of races, to some extent due to climate, but also unchanged by conditions that might seem to favor but really repress, and to repress apparently but in reality to favor the illicit. The little respect for women in France comes from her having no legislative champions. When she becomes able to influence votes *la femme* will be greatly advanced to a real position which now the politeness of the French males pretend to accord her with all insincerity and hypocrisy.

Some "advanced" female talks of a time coming when women will rise against tyrant males. No matter how vilely women are

treated such a time will never come, for mothers and sons, and all the relationships of the sexes, even aside from sweethearts, will prevent such nonsense as surely as that the right and left hands will not fight.

Young females should not be permitted to go out into the world uninstructed as lambs among wolves. They are apt to get distorted ideas from the ignorant or designing. Like the high bred female dog that throws herself away on a cur of low degree because raised with it, so merely sitting next to one at a dining table may result in incongruous mating, such as was mentioned by Oliver Wendell Holmes²⁸ in the deformed little Bostonian winning the heart of the pretty young girl boarder. So circumstances and opportunity are potent, and crude notions about destiny, and matches being foreordained are nonsense.

Grumpy old Carlyle says "Love is not altogether a delirium, yet it has many points in common therewith," and Shakespeare's Rosalind says it is "a kind of madness that needs the dark house and the whip." It was probably the philosophical Goethe who suggested the lines of Schiller to the effect that until philosophy ruled universally the world would continue to be governed by hunger and love, and this all-important influence is absurdly avoided by metaphysicians. Turning the back upon the truths of nature is no way to understand them, but the people dare not think for themselves and hence repeat like parrots what their masters in state and church permit them to say, or think or read. The truth frightens these leaders, for it uncovers their schemes and threatens their grab of intellects and purses. Another piece of silliness is the inverting of cause and effect, as in the case of one demagogue physician who wrote an essay in which he took the ground that the desire for children was the cause of the sexual function, when were it not for the sexual desire the earth would be rapidly depopulated.

Dr. Paulo Montegazza²⁹ says, among many things, good, bad and indifferent, that for one genius killed by love there are hundreds who owe to it their greatest inspiration; the widower usually makes a good husband; one of the characteristics of love is injustice; one may love more than once, the loved woman is

²⁸ Professor at the Breakfast Table.

²⁹ The Physiology of Love.

always an angel, the one not loved is an ordinary female. The bulk of his "scientific" discourse on love is the usual rhapsodical sentimentousness without analytical depth. Though occasionally a romancer will phrase what is well worth investigating, such as "friendship based upon past love is the most enduring," and an old song has it, "the world is full of beauty when the heart is full of love," and this is a truism based upon the general exaltation of the senses akin to what occurs in simple mania. Good fortune may effect something of the same experience, showing that other things than love can produce the general feeling of well being, though love is more intense in its influence. Melancholia exhibits the direct reverse of this. The depression being general the world is hideous and full of suffering. The antics in novels of love episodes remind a naturalist of the struttings, scrapings, fighting for possession of the mate. The dramas, comedies and romances of life are classifiable under turmoil for food or mating. Hunger and love centralize everything we may do, and concerned with them is the evolution of all thought, all senses, feeling, memory and acts of all kinds. Sometimes according to privation of one or the other all thought and acts may be controlled by either feeling, and all faculties may be subordinate thereto.

Great sexual development has been associated with much mental vigor. It is the animality zest that gives force to character. Not that intellect is dependent upon sexual vigor, but force or energy, the driving power, health, strength which puts intellect into acts, is associated with the animal development, generally. Eunuchs are proverbially lazy. Some men have the lowest development of sexual instincts and cannot experience what is known as love, because the emotion is in higher life made up of too many complex elements, often the very best mental essence of the man. While the sexual basis normally remains the superstructure is often all that is seen or admitted.

The parallels of hunger and love are in the honeymoon banquet, as savages gorge themselves and satiety follows. Indifference appears to follow, but it is not such, it is akin to the hungry man sitting down to regularity of life, and his starvation being over he does not realize that his hunger is steadily appeased and hence not urgent. "We do not miss the water till the well runs

dry" are the words of a popular old song. Absence intensifies real affection and renews the hunger. But there is great variability in appetites, some are sparing and light eaters, others are gourmands. "In the spring the young man's fancy lightly turns to thoughts of love," and this erethism of the season is that of the pairing season of the frogs and birds. All animal life is astir at the breeding season and every animal is at his best as a fighter, in general activity and intelligence. For this reason the lovelorn poet is "inspired," and the winsome ways of the lover are increased, and all the senses and emotions are exalted as in acute mania. Unpleasant things beget dislike and pleasant matters induce liking, so, other things equal, the one who can offer most of this world's goods has the advantage in love as in other things, though peculiar nooks and corners of evolution are found where wealth is often a great disadvantage. Certainly it does not insure true affection in all cases.

An effectual answer to the possibility of any one loving twice in a life time occurs in multiple marriages, and as an example of intellectual sentiment being engaged in the passion at times may be called the sense of duty that survives when all else may have departed. The ardent attachments and murderous jealousies of sunny lands can be put in the category of spring awakening, whether annual or as in Greenland, not only annual, but intensified by the previous six months' darkness and absence of the sun. Then jealousy need not be merely a sexual concern, for it may exist in the absence of love as an interference with property, as a resentment, and is then mere envy or hatred of what tends to dispossess. Intense ardor is infrequent in northern countries, and sentiment of rather an intellectual sort may cause very young women to prefer an old man, but the bulk of young femininity prefers the absence of disparity. Marriages of conveniences produce grotesque unions at times, with unhappiness in proportion to the looked for enjoyment of the wealth. The illusion being removed the awakening has been unpleasant enough.

When an experience arises for the first time in the life of an individual and it happens to be one that has perpetually arisen in the species at some time in the course of the individual life, such as recur at puberty, a love experience, for example, then the feel-

ing is accompanied by a consciousness that something like this new sensation had occurred to the person ages ago. This awakening of an organic memory, a racial inherited inborn remembrance, can be best accounted for physically, chemically and developmentally. The organs and their attachments to the central nervous system gradually build up and connect with the seats of consciousness in the gray matter of the brain, until the machinery is adjusted, on the basis of what has been inherited from long lines of ancestors, to react to the particular impression; it does not do so until the machinery is complete, and the reflexes are ready to respond, then the impression exerts its traditional effect as it has on millions of progenitors for millions of years, and organic memory recognizes the effect as one consonant with ages of experience, or at least something occurs in consciousness equivalent to an awakened memory, a sensation of something having taken place that is suitable to the construction of the body, brain and mind. So with eating and other functions when performed readily for the first time, the pleasure aroused appears to be perfectly natural and as though it had been experienced for ages.

If simultaneously sensations (molecular movements recognized in consciousness) occur in separate parts of the body and like results ensue from the sensation in each part, such as two cells hungering or sexually excited at the same instant in the course of evolution eventually, either in the individual or the species, often in both, some mode of nerve communication is instituted and centres are informed of the excitement. In this way all the cells would unite to exhibit that excitement in the colony or the individuals composing the colony, and the "nation," to use an analogy, would act as one man. Then if the elaborating eating cells, the enteric parts, came to be excited, all the rest of the body cells would feel the excitement and wake up to a realization of the likelihood that each other cell in all the other parts of the person would soon be fed. Cells also specially concerned in reproduction in a similar or comparable excitement could extend their feelings to every other cell in the body, because all cells have the primitive hunger and reproductive faculties. So also satiety or the feeling of rest accompanying the gratification in each instance. When an organism has a complex nervous system capa-

ble of sustaining compound impressions based upon a primary experience then the entire colony of cells to the remotest parts of the body participate in the gratification, as in the instance of the union of admiration, respect, gratified self-love, vanity and higher emotions with what is ordinarily called love. The ecstasy is more complete when universal.

Mental derangements are associated with the function sometimes in illy understood ways, for example, in the insanity of pubescence known as hebephrenia there is a general failure of the intellect to develop properly and the virility of the grown man appears with the silliness of the young boy, the mind has not grown with the body, and the self-abuse is not a cause but a consequence of this mental failure to develop; similarly other exhibitions of the kind in children are often due to a mental cause rather than the abuse being the cause of the mental degradation. An insanity called post-connubial ceases to be mysterious when we regard it as an agitated melancholia from exhaustion, it promptly recovers as a rule with rest and absence of the exciting cause.

Alcohol excites erotism by its direct blood intoxication or oxidation of cells and alienists are much interested in the marital infidelity delusions of chronic alcoholic insanity. With the most remarkable frequency the person made insane by alcohol imagines that his wife is unfaithful, and sometimes murders her in that unjust belief. I have observed this delusion in head-injury cases in which there was no alcoholism. The alcoholic is also apt to think he is poisoned.

Illusions and delusions are easily recognized as being caused by love. Faults are unobserved, beauty is seen where it is not and all the favored one does is approved of or condoned or even flagrant defects are ignored. The reverse is also true, as shown in the expression that "faults are thick where love is thin."

Other mental peculiarities appear in the course of the sexual life and development. In the female climacteric Clouston³⁰ tells of the mental changes sometimes observed, and notes that man also during senility periods undergoes occasional mental revolutions. But in women the radical adjustment of the blood vessel system throughout the body involving both the ovaries and the

³⁰ Insanity, p. 388.

brain, according to the resisting power of the individual, combined with certain special liabilities to irritation and its tendency to manifest the irritation in certain ways, sufficiently account for mental aberration at this "change of life" period. The race has become largely proof against any particular mental or bodily discomfort following or accompanying this period, but in a few there is heart rapidity, timidity, depression and change of character, with flushings and hot feelings. In some old maids the ardor appears for the first time, as its basic functions are about to disappear, as though the dying of the functions created irritability of the related nerves and suggested ideas these women were strangers to previously. The orgasm seems like the final extension of participation by the general body more or less, the latent reproductive faculty in other than specialized cells is also evoked, and thus the supervening exhaustion and rejuvenation, the restfulness, mental clearness and general lavage are likewise explained. The relation between sexual and olfactory illusions and hallucinations is of clinical frequency and points to the primitive location of sexual desire in the olfactory centres, as it certainly is in many quadrupeds. The optic sense, however, is the prime associate of the sexual in the developed bimana. The possibility of complete repression of any single animal propensity would be a physiological study. We know that hunger can be antagonized by a starvation process within certain limits and excretory functions may be woefully neglected, but that the sexual appetite may be extinguished by religious methods is doubtful and deserves to be regarded with suspicion.

The masculine orgasm is ejaculatory, excretory, and empties vessels concerned in retaining spermatozoa and accessory substances, and the intensity varies greatly according to circumstances. Mentality may be concerned to the extent of intensifying or cutting short the orgasm. Such a thing as too much affection, fear of consequences, etc., may repress the major exhibitions of the act or diminish part of the function. The mental association is so radical and so bound up is the entire brain in the reproductive function that it ceases to be a mystery that the imagination should run riot where this faculty is concerned. Your vagrant thoughts on these subjects that annoy and often disgust you, are

mere inherited brain workings for which neither you nor the legions of your progenitors are responsible, as all alike have obtained them from anterior animal and plant processes, and they from the same causes that impel hydrogen and oxygen to combine, or nitrogen and oxygen to flow away from each other, as states of environment favor the meetings and partings. The participation of every cell in the body in the excitement under favorable conditions, and its failure to engage but a part of the cells and nervous system, arise from circumstances and previous organization combined to make the sensation general or restricted.

J. Marion Sims, the surgeon, naively narrates his courtship depression and exaltation.³¹ When Shakespeare said that "men have died and worms have eaten them, but not for love," he did not necessarily endorse the views of one of his characters. He makes Ophelia a melancholiac from her love disappointment and, though not generally known, such griefs are among the most frequent exciting causes of insanity in those predisposed to break down.

Hammond³² quotes Lisfranc that "man places his dignity in his virile organs," though this may be interpreted that virility, force of character, the powerful man, has a well developed physiology in its chief divisions of assimilation, etc. The woman, too, as such, and as a mother reaches her highest physiological development, and while the male develops in one way the female does in another and the law of differentiation determines that the two shall be unlike, though in what ways natural and sexual selection will decide, in spite of all the theorizing of those who would reduce woman to slavery, or those who would prefer that she should do all that the man can do.

The higher the type of man and woman the more exalted will be their views upon all subjects, including those connected with basic functions, and the more complex is apt to be their love enjoyments and sufferings.

The shock of a discovery of flagrante has unseated the mind. An instance I can recall reduced the husband to temporary dementia, his memory was gone, he did not know his own name or busi-

³¹ My Life, J. M. Sims.

³² Insanity, p. 458.

ness, and recognizing the transient nature of this form of insanity I advised precautions against an outburst of fury when he recovered. He had retained some ability to be irritated when the disturbing matter was mentioned. A Minnesota editor was engaged to be married and the discovery was made that the person he was to marry was a male. The announcement unsettled the reason of the editor and he drank himself to death. When incompatibility is a plea for divorce on a discovered physical deficiency the death of the associated love shows at once upon what the affection rests, though not exclusively. The more intense the mental concern the higher the love, but the greater the shock of disappointment. A stupid person could not be so disturbed. The differences between animals in their courtships resemble those of human affairs of the kind. The monogamous and the polygamous inclinations of species, the ferocity of some matings and the gentleness of others in the same genera all develop from the promiscuity of the ancestral stock whence the species were derived. Circumstances, accident, natural as well as sexual selection originate all the varying accompaniments of love-making in animals and men. The secondary or accessory sexual peculiarities, as differences in hair length, presence and absence of beard, pitch of voices, scents, sounds, sizes, ornamentation, glandular development, horns and claspers among the many others that could be listed, are acquired additional matters that have become attractions by association or have been converted into means of gratification. The chemical desire being developed at the same time with senses to contribute to the desire or to comprehend it, such as the touch and smelling senses and later hearing and sight, and the development of these important special senses it is conceivable may have been largely due to their stimulation through sexual desire. It is demonstrable that all the special senses are modifications of the original tactile or touch sense and nothing could be more potent to evolve the special senses than the two emotions or desires, feelings, or sensations, as they may appear to be from various standpoints, those of hunger and love. The law of association is at work also in this development of any accessory anatomical or physiological sexual peculiarity as much as when what are unpleasant sights or sounds ordinarily may be converted into pleasant

ones by association with matters that are pleasant. For instance, an ugly face or harsh voice may cause the heart to leap for joy when the possessor of these otherwise unattractive peculiarities is loved for other reasons.

Development of secondary sexual apparatus may take place in startling ways, the claspers of the ray are homologous with quite different organs of the mammal.³³ H. I. Gorman³⁴ claims that the phosphorescence of the lampyridæ originates in sexual attraction of females for the males. Undoubtedly colors, scents, sounds and illumination are demonstrably for sexual attraction in insect, fish, and other animal life, to a great degree. Darwin³⁵ mentions the secondary sexual characters of birds. In the male elephant two orifices in the forehead exude a tarry substance when the sexual madness or fury seizes the mad male, at certain seasons of the year. The male mud turtle has larger claws apparently for clasping purposes in union. A warty protuberance is developed on the thumb of the male frog during the breeding season to assist in holding the female, and in some species the whole fore-arm becomes enlarged at this time. The axis of each pelvic fin of the shark is developed into a "clasper" connected with the reproductive functions.³⁶ Rays also have these claspers. Ancient fossil sharks had no claspers, so this is a later sexual development and bears upon association in evolution conferring additions and modifications upon the sexual methods, and even desires, so as to radically change them. Urodela amphibians have prehensile claws during the breeding season. The hind foot of the Triton aids in pursuit of the female and is absorbed during the winter. The human sebaceous glands at puberty and during or before menstruation become enlarged and many young people of about eighteen years of age are greatly mortified at this advertisement on their faces of their continence, which they consider unsightly, but to a physician indicates quite probable innocence, even though ignorance is not always the same thing. The odoriferous glands on the nose of the deer are akin to these human blemishes. The

³³ American Naturalist, Oct. 1886, p. 904.

³⁴ Journal of Royal Microscopical Society, Oct. 1880.

³⁵ Descent of Man, Vol. II, p. 36.

³⁶ Lydeker, Natural History, Vol. V, p. 520.

antelope has a gland under each eye and the wild-beeste also, marked by hair tufts. These are peculiar to the males and are checked by castration. Skunks and goats if castrated young do not have their usual odor. The musk of the male deer in connection with their herds running up the wind enable locating of their kind. The castoreum of the beaver is a powerful heart stimulant. The fox of India has not the strong scent of the European fox, so hounds cannot follow the first so well. During the mating season the crocodile gives off a musky odor from submaxillary glands.

The primary ancestral attraction is in the germ and sperm cells like that of hydrogen for oxygen, and all the secondary apparatus have developed or evolved to facilitate this juncture of these elementary organs, the germ and sperm cell, and acute sensations accumulated step by step through association as the sensory apparatus became more complex, but no matter how intricate and how multiple the organs and feelings involved the primary instinct remains as the base of the highest and most complicated exhibitions of the passion, and the atomic preferences lie still deeper and behind all of it, the intense molecular affinities are the causes of cell attraction and molecules are built up by atoms that prefer other atoms, and appear unable to exist singly and apart from one another, so that if unlike atoms cannot be secured, two atoms of the same elementary nature will associate in preference to being alone, and this could be the basis of gregariousness of plants and animals, in spite of temporary solitary roamers and apparent segregation. A complete separation would mean destruction of the species, so inherently all life is gregarious. As the kidneys, liver, stomach and related organs have been evolved to facilitate assimilation, in its last analysis it is merely the interchange of molecules and atomic construction of molecules that constitutes assimilation or eating. No more nor less is the union of the ovum and spermatozoön.

Attraction, however, may not be mutual between individuals of opposite or the same sex, any more than that the molecules of all compounds can unite with those of other compounds. Some atoms are comparatively inert, as are certain molecular combinations. One of the most indifferent combinations is the sulphate

of barium. The sexes may repel one another or one be distasteful to the other until the requisite, sometimes unknown, change occurs that enables attraction to be mutual. It is well known to chemists that an atom *a* may not care for the atoms *b* or *c*, but when *b* and *c* are united in one molecule *a* may be irresistibly drawn to that molecule.

The law of battle between males for possession of the females may be likened to the molecular or atomic clash in their rush for combination, where one compound exceeds or is stronger than the other, so the battle being to the strong in natural selection is also based upon the greater force of these chemical ultimates.

The change of cartilage into bone may be used to explain the development of the ova and its attractiveness for the spermatozoa. When a tissue has reached a certain stage of chemical development so it may take up further compounds and cause the structure to become more complex or change its constituents, then a step in organization takes place. Thus *a* may have affinity for *b* and *a* *b* for *c*, but if *a* has not *b* it cannot combine with *c*. So the unripe ovum *a* does not unite with the spermatozoon *c* until the *a* *b* stage is reached. Until certain glandular structures are built that have affinities for animal and vegetable tissues, there can be no attraction between the intestine and its contents, the food and the animal that eats it. Immature organs will not assimilate ripe fruit nor can unripe fruit be assimilated by the fully organized digestive apparatus, but when both the alimentary canal and the food are united to one another then digestion can occur, as the completed ova and spermatozoa combine.

In some ways the ova and spermatozoa may be regarded as parasites which chemically develop as embryo upon the tissues of their parents, the hosts, through being furnished with the essentials for a speedy development, where in the evolution of the species these same chemical elements in the environment instead of in the parent (the environment of the embryo) were slowly and with difficulty taken up to build one animal higher than another.

If *A* develops into *B* and then *C*, the germ and sperm cells of *A* afford *a* with affinity for *b* and *c* which pabulum they find already in the tissues at hand. Post-natal life carrying on the

process through adapted food which at first is maternal milk, merely nutriment derived from the blood of the parent.

The male and female elements are complementary compounds which when mature have affinities, their immature, unbuilt molecular structure have not. One may be of an acid nature and another an alkaline and when finally ready to unite the higher and complete organic compound is built to enable further higher molecular construction, and even to the last the adult man may be regarded as a molecule with compound affinities, but fundamentally they are the same as those of the cells.

In organisms that have no sex (asexual) the single cell may suffice to build up all the molecule, but the male and female elements may exist in the same animal and constitute that animal asexual and hermaphroditic, but it is a mere step in the formation of separate sexes.

Another view would be that the molecular causes the cellular attraction in the lowest life but where that attraction is compounded by association with secondary organs and senses, the parent or entire organism may be also attracted, if not fixed as are plants, and much animal mobility is built upon the primitive sexual attraction.

In plant fertilization we cannot conceive of such a thing as a plant having a desire for the other sex. The union of the two sexual elements is apparently by chance but nevertheless their sex elements have affinities for one another.

So the plant desire resides in its sex elements, the seed and pollen, and is chemical though the entire plant may be grown upon an adjustment to pollen and seed union and distribution. The union, however, due to winds, birds or insects, appears to be independent of the plant, though in reality these accessory methods of fertilization are what causes the plant to survive, and hence these seemingly accidental means of plant propagation are as natural as other methods more obviously so.

A bisexual animal could develop into a unisexual through environment changes, and a unisexual animal would develop from the double sexed, through one sexual organ in such animal developing more than the other sexual organ. For example, if an ovary and testes, or their equivalents, were contained in the same

animal, some of these animals would develop better ovaries, and others better testes, and imperfect other sexual organs, just as rudimentary accessory apparatus, such as the clitoris and nipples are atrophic vestiges of a bisexual state in both man and woman. Sometimes hermaphrodism persists through one ovary and one testicle being preserved to greater or less degree, and inversion of sex could be based upon accessory organs being wrongly developed, as those of a male appearing in a female, as the beard or other feature, or mammæ being large in a male.

Reproductive organs in higher animals, especially the testes and ovaries, may merely be developed to take from the circulation such chemical pabulum as may be concerned in the formation of the embryo. For instance, the lime salts in the cloaca of the hen are there ready when the time arrives for the membrane to attach itself thereto, and so may every other specialized process be similarly carried on by ovaries, etc., and the organs may be divided into chemical and mechanical, the latter for conveying purposes. Embryological and phylogenetic development copy one another. In the latter substances in the environment are utilized for which the animal has affinities, and the tissues embryologically seek out these same substances in the circulation. If the affinity persists by heredity it would be natural for certain salts and other chemical pabulum to be attracted to the embryo just as is the case phylogenetically. Butchli and Pfeffer's researches concerning moss and fern spermatozoid affinity for malic acid, etc., are important as showing the the chemical nature of the genetic origin.

The reason why the separation of sexes occurs is that cells that tend to undergo higher differentiation have the greater attraction for the sexual cells than when undifferentiated. The higher developed sexual cell has a greater attractive influence than appears in the relatively low organism and hence sexual selection and heredity begin down close to atomic combinations, if they are not also the direct cause of selection and heredity.

Dr. Van de Corput³⁷ notes the diminution of virile power through antiseptics as salicylic acid, quinine, menthol, carbolic acid, seeming to act on the blood elements and sexual cells as on inferior organisms. Spermatozooids become in effect completely

³⁷ Revue de Therapeutique, Brussels, 1901.

immobile, under the microscope, like all the leucocytes, which lose their amœboid movement and can no longer migrate. Salicylic acid acts in the same manner upon the ovary and causes the lengthening of the intermenstrual period.

The fusion or splitting of one animal into two is practically all there is in reproduction and an extension of life of the original individuals into duplicates or improved forms constitutes a sort of prolonged life, a relative immortality, the senile part, the ancestor, dying.

This continuity of the organic life of the parent with that of the germ and the sperm cell offspring is discussed by many biologists. Thompson's "Animal Life" gives a summary of the various theories such as pangenesis and mentions the theory which regards the cells of reproduction as continuous with and as old as the parent. But the germ is in organic evolution something more than the ancestral germ, because there have been changes of environment and growth that have added to the structure and possibilities in the evolutionary scale from the very beginning in invertebrate forms and upward from and through the lemur or half-ape stage to man. Instead of pangenesis we would have ovular potencies latent, developing in the suitable environment, that which afforded the necessary chemical substances for growth. The yolk stands for the placenta, for all that either can do is to afford nutriment so arranged chemically as to build up tissues for the foetus. The cells develop and change at the proper time and thus the entire infant is formed on principles which build up symmetrical crystalline molecules. So the ovary and ovum merely localize the reproductive function which inheres in every cell of the body, from the highest to the very lowest organisms. Pangenesis is further not necessary for if the ovaries are high elaborations of cells which can readily draw the constituents for further development directly from the blood, or other fluids, as the seed draws from the soil, and we observe the nutrition needed for budding or fission in low animal life to be directly abstracted from the nutriment fluids of the animal without the intervention of the ovary, which is evolved to afford this abstraction and growth to a better degree. Specialization abbreviates all the other functions but the reproductive in genetic cells, the ten-

dency being for many cells to develop in certain special directions. The special function of reproduction being highly developed in certain cells, though belonging to all cells in less degree. It can be inferred from ovular segmentation being similar to cell proliferation generally, that nutritional processes for the ova are derived from and are essentially the same as those of the body, and tracing all these methods of increase downward, the same universal laws of assimilation, growth and splitting apply.

Meroblastic segmentation is the incomplete method as in fowls and most fishes. Holoblastic is where the segmentation is complete. And there is a vast nutritive importance in the food yolk, as a reservoir from which further molecular building up occurs in regular order, as one chemical substance created enables another to be taken up, the yolk affording the materials to the embryo, as the soil, water and air does to the seed of the plant.

Interbreeding fails to present the molecular differences which the evolving types need for their advancement, and it may be set down as a rule that if interbreeding does not cause deterioration it is because the organism is low in the scale, and is not in the rapidly advancing series.

Darwin shows that plants produced from the pollen of one flower applied to the pistil of another are stronger and more vigorous than plants produced from stamens and ovules of a single blossom. This cross fertilization is what by natural and sexual selection eventuated sexual genesis from hermaphrodism. Two plants self fertilized would occupy an inferior place botanically to plants cross fertilized even though capable of self fertilization, until finally habit and development would determine the fertilizer and fertilized plants apart, and start plants with single sexes. The ovules of one and pistils of the other plants, the ovaries of the one and testes of the other animal becoming atrophied and determining the sexes of living organisms.

Corn when self fertilized is not as good as when cross fertilized. Self fecundating animals may accidentally become cross fecundating and thus improve upon the previous hermaphroditic method, just as plants may thus evolve, and an advantage is originated and perpetuated by the labor division.

J. C. Arthur³⁸ affirms that "any cause which retards development of an animal or plant favors reproduction. Rather that the organism will develop the reproductive parts of its structure faster and more fully than the other parts, and in the case of crops the yield of seed will be greater proportionately than of the leaves and stems." This can account for the salacity of imbeciles and some other insane. The intensity of animal passion that bursts forth in some uncultured races and in the weak minded menaces communities at times, but the usual natural selection process is extermination by mob law.

The intensity of the eel ardor has made it notorious. They exhaust themselves in breeding and the old eels die. Its ancestry without very definite nervous connections of their cells could not have the reproductive desires of its various elements so well associated. The eel being an early vertebrate with its somites or segments related by a nervous system, general co-ordinated activity and a keener response would follow as compared with organisms not so well provided with nerves and central co-ordinating apparatus. The eel pot tenacity of intertwining suggests that in his adolescent form, phylogenetically speaking, the awakened ardor of puberty in the boy affords an ontogenetic comparison. With him the nerve relations are practically established for the first time and the "heavens are brass" till the desire is appeased, and the young need more scientific supervision at this time than before, or later, though they will continue to be turned loose like other animals, often lambs among wolves. Daughters especially need oversight and careful, proper instruction.

A spinal injury or an irritation in the upper part of the spinal cord where the erector centre is situated may cause painful and chronic priapism, thus indicating another secondary sexual accessory for correlating purposes.

In the building up of nervous tracts those concerned in food procuring are the most prominent and next follow those relating to sexual functions, and to a great extent the rest of the nervous system is merely superimposed and associated with these. One feeling excluding all others, for the time being, as fear, hunger,

³⁸ Deviation in Development Due to Unripe Seeds, American Naturalist, Oct. 1895, p. 904.

sexual desire, indicates how the entire brain may be tributary to each division, so from this could be argued the absence of special centres in the brain for such feelings, and just as the same muscles may contribute to varied needs and wants, so the same nervous distribution may answer to first one, and then another instigation or desire conveying to consciousness the sensations from the viscera that are known as emotions and other feelings that are not usually classified as emotions.

Plants and animals, however varied and seemingly developed, are made up of the cells that are common to all living things, just as hovels or palaces may alike be built of bricks, and similarly the cellular functions remain the same in highest and lowest, as the rich are made like the poor. Let the basic organs be defective and a post marital discovery thereof be made, the divorce proceedings reveal upon what domestic happiness is built.

The United States Fish Commission reports tabulate some facts as to marine animals that enable deductions as to evolutionary development: The right whale gestation period is one year. Most seals are polygamous and fight for harems. The unsuccessful seals are bachelors. Cod ova must come in contact with the milt very soon or they will not develop. Surf fishes are viviparous. Pike rub one another violently and deposit their spawn with violent blows of their tails. White fish have strong sexual ardor, chasing each other and emit spawn when vents are approximated. They are probably monogamous. Carp are probably polyandrous as three males will follow the female when she is spawning. Possibly when eggs are more numerous among white carp more than one milter is required to impregnate the ova. Salmon leave the sea and spawn in fresh water often dying there, while eels seek the sea to spawn. Oysters emit both ova and spermatozoa which apparently meet as plant elements do so that sexual desire in such degenerate forms would be allied to the excretory more than to any higher or complicated feelings. Sturgeons lay enormous numbers of minute eggs, one female numbering three million during a season. The lobster places his double member into the outer genital opening, and the eggs are impregnated while yet in the ovary, and are emitted immediately after. Among all animals the number of mates are determined by circumstances of strength, conven-

ience, salacity, and finally a custom is soon established. Pond snails are viviparous and the young are born with shells and start out independently at once. Some gastropods are unisexual. Chitons are bisexual, but like the limpets are destitute of certain functional organs. Moss animals are hermaphroditic, and the male and female elements mingle freely together in the body fluids, and these low forms of life afford stepping places to the higher single sexed animals by natural selection developing separate sexes in their descendants. The fresh water mussels have the sexes united in European species, and distinct in the American species. In early life they are parasitic and the eggs are hatched in the gills of the parent and develop into minute bivalves which attach themselves by a byssal thread to any object and later to the gills and to other parts of fishes, and finally sink to assume the parent form. The amphioxus generally, but not invariably, lays eggs in fresh water and they are fertilized as they are extruded from the female. Frogs and toads have lengthened larval habits, the tadpole has a globular head and fish like tail. Adults are nocturnal. The spawn of the frog rises to the surface in glairy masses and is devoured in large amounts by newts and fishes. Salmon spawn is at once fecundated by milt at intervals, and the fertilization adds greatly to the specific gravity of the eggs which sink and are covered with gravel by the tail of the female. In 120 to 140 days, according to the temperature, the eggs hatch. The adult males are great cannibals and feed upon their own offspring. The males also fight fiercely with each other when attending the females. Wras-ses produce living young contained in the sheath of ovaries instead of the oviduct. Ctenophora are hermaphroditic and Hydras reproduce if cut in pieces, the lost parts of each piece are regenerated. Besides developing sexually there is among sponges a "vegetation propagation." Sponge spermatozoa have conical heads and long vibratile tails formed from the male cells by division of the nucleus. The ova are large rounded cells which after fertilization undergo segmentation. The embryos are minute oval bodies about the size of a pin's head. After a couple of days' independent existence they are thrown out of the craters or oscules and they become fixed. Polar bears bring forth their young beneath the snow.

Nineteen months is the average period of gestation in elephants and from 18 to 23 months in some. One offspring is born at a time. Some reptiles are oviparous and others viviparous while some are both.

There may be degeneracy of one or the other sex among low forms of life to a state of mere parasitism in which the degenerate animal apparently performs no other than a sexual function, as in Rotifera.³⁹ Protozoa are sexless and among the coelenterata the Hydromedusæ sexes are distinct usually, and are traced back to asexual ancestors from which the gonophores arise, with occasional exceptions. The Medusæ are higher unisexual. Chrysaora are hermaphroditic. Vermes are greatly varied sexually. Oviducts of Gephyrean Bonellia contain microscopic degenerate males. So that the male has shrunk up and reverted to the original spermatozoon state. The simplest origin of sponge element cells, here and there from ova and spermatozoa, may throw light on their chemical origin, these cells being situated where special organs and inorganic compounds develop them.⁴⁰ The pedalium rotifer male is a veritable dwarf, compared to the female. Some male spiders are smaller than the female who may devour her mate after the marital repast, thus confusing the desires of hunger and love.

M. R. Quinton⁴¹ thinks that the different modes of reproduction, oviparous, marsupial and viviparous, are the consequences of the cooling of the globe. Life appeared at the high temperature with so-called "cold blooded" animals that have undergone adaptation, that now, as then, determines an equality between their internal temperatures and that of the medium in which they live. Incubation and viviparous gestation come from using the animal's own heat, and hence mammals and birds follow the reptile ages. Many fishes do not copulate. The amphioxus possesses the earliest trace of a penis.⁴² Leeuwenhoek regarded the spermatozoon as a parasite when he first observed it, and the spermatozoid of von Siebold, and the fila spermatica of Kölliker are the same organism under different names. It absorbs nutriment from enviro-

³⁹ Encyc. Britt., Vol. XXI, p. 720, Article Sex.

⁴⁰ Op. Cit., Vol. XX, p. 407, Article Reproduction.

⁴¹ Quoted by Coues, 1897.

⁴² Encyc. Britt., Vol. XX, p. 410.

oning tissues and its chemical analysis is given.⁴³ Though they are cold blooded, frogs and toads have strong passions, sometimes a female toad is smothered by being hugged to death by three or four males.

Were the seminal material made from elements concerned in physiological energy, so-called vitality, it would appear that when their further manufacture were ended there would be increased activity in the animal as the supply would be furnished other parts of the body, the gelding would be more active than the stallion but aside from the irritation and spur to activity the seminal function affords, the lessening of the reproductive function not only in the main organs but throughout the cells of the body would abstract just so much energy and in many cases tends to plethora and increased general growth with laziness. Some dogs and cats and occasionally boys who have been altered grow large and lethargic. Among orientals there are three kinds of eunuchs, one kind have the virile member cut off, in another only the scrotum is taken away, and the complete sort have the scrotum and all cut off. In both the first and third a small silver tube is used for micturition. It is claimed that where the scrotum alone, with its contents, is destroyed the erections continue, but without orgasm and in any case where ablation of testes is made after puberty the sexual desire remains though ungratified. Once experienced the nervous adjustment and organic memory is aroused in the spinal cord and brain, and is never forgotten. It is quite probable that castration of the young before the passion is aroused can be followed by dormancy of desire and its extinction. One testicle cut off has increased the erethism, and it often occurs that after ovariectomy women suffer from nymphomania where previously they had been as continent as any lady could be. The complementary nature of growth and reproduction is seen in the large size attained by the altered dog and similar instances in other animals. Growth precedes reproduction in the lowest to the highest organisms and when the latter function is suppressed the growth may become excessive but the mere excitement following the inflammatory processes after amputations from the stump of nerves and vessels con-

⁴³ Ibid, p. 411.

veying sensations to nerve centres is not to be confused with the normal conditions. But that the secondary accessory organs may act to some degree independently is seen in prostatic fluid or vaginal mucus ejaculations sans testes et ovaries. At a certain period of development when molecules are adjusted, "ripe," for further assimilation, puberty, a certain food present, other molecules to construct ovaries and testes and their contents are arranged or built up. Previous to this the capacity for uniting had not been reached. $A + B + C + D$ and so on must proceed onward to the X stage before Y and Z can be taken up. So whether the male element rests in the unisexual or bisexual individual the higher food is assimilable only after certain development is reached, just as infantile glands must appear before solid food is acceptable.

That inbreeding causes degeneracy and mixed stock thrives best, within limits, and that also, within limits, like attracts unlike, have been repeatedly observed. An explanation may lie fundamentally in the radical and base compounds forming the strongest affinities, as alkalines and acids, and molecular compounds of the same kind are less attracted than where, within a certain range, differences exist. Chemical differences of species are most likely to accrue, through difference of environment, and, unless these changes are too radical, a better and more stable chemical physiological structure would arise by such union, as where ions are farthest apart positively and negatively, but sexual selection will decide the limits and modifications of this electro-chemical analogy.

Going upon the supposition that the spermatozoids of cryptogamic plants must be attracted to the female cells by means of some emanations from the latter acting as appropriate stimuli to the former, Prof. Pfeffer of Tübingen tried at random a large number of chemical solutions, in order to find if any of them would succeed in attracting the spermatozoids. Eventually he found that spermatozoids of certain ferns are infallibly attracted by a solution of malic acid, so that if a pipette be filled with this solution and dipped into a watch glass of fluids containing the spermatozoids, the latter will crowd from all parts of the fluid into the pipette. Now, as malic acid occurs in the ferns, it is easy to see how natural selection may have utilized this substance for the purpose of guiding spermatozoids to female cells: survival of

the fittest can very well have acted on the spermatozoids through the countless generations—always favoring those to which malic acid acted in any degree as a stimulus, until malic acid now constitutes an unfailing attraction. Yet, if so, there need never have been any “psychic life” in the matter; the spermatozoids are to their physiological correlatives in a manner as purely “mechanical” as particles of water are elsewhere.

Pfeffer also found that cane sugar and malic acid acted differently on the spermatozoids of ferns and mosses. *Confervæ* spermatozoids are attracted only by cane sugar. Similar substances such as glucose or milk sugar have no influence.⁴⁴ Binet⁴⁵ notes that the spermatozoid and the ovule repeat on a small scale what the two individuals do on a large scale. The spermatozoid goes in quest of the female element. It owns organs of locomotion the ovule does not have. Often the organ is a long tail which is whipped in a conical direction and moves the spermatozoid forward. The same occurs in *Algæ* and *mastigophores* which are armed with flagella, an undulatory membrane like a fin moves the sperm cell of the *Triton* and *Axolotl*. The spermatogenic element is animated by the same sexual instinct of the parent organisms. In the hen the oviduct may be 60 centimeters long and in large mammals half as long, and the frail and minute sperm cells are carried along these tracks irresistibly. Henle has seen them carry along with them masses of crystals ten times larger than themselves without lessening their speed. Ponchet and Balbiani have seen them carry eight to ten blood globules, a volume double that of the head of the spermatozoid, four or five times heavier than itself. In the case of a star-fish one spermatozoid outstrips others in the race and arrives near the vitellus or protoplasm of the ovule, the outside of which is seen to lift up in the shape of a little projection or cone, which glues to the head of the spermatozoid and draws it into the interior, leaving the tail outside, and the ovule rejects all other

⁴⁴ Pfeffer, *Untersuchungen aus dem botanischen Institut zu Tübingen*, Vol. I, Leipzig, 1884, p. 363; commented upon by Ribot, *Psychologie Allemande*, p. 161, and Binet, *Psychic Life of Micro-Organisms*, Open Court translation, 1889, p. 86.

⁴⁵ Binet, *Op. Cit.*, p. 77.

male elements by forming a hard envelope. So the law of sexual selection applies to the minutest sexual elements.

Balbani and Gruber⁴⁶ say of micro-organisms it is as true as of all other animals the act of coition is preceded by activity for a long time. Among the ciliated Infusoria, as well as other microscopic life, "the female when pursued by the male seems under two conflicting desires, that of yielding to and of repelling his approaches." This show of unwillingness which is but temporary and more seeming than real, excites the male to captivate the female. Espinas claims there are five classes of phenomena preparatory to sexual union; firstly, provocation contact, the lowest of all these; secondly, odor; thirdly, color and form; fourthly, noise and sound; fifthly, play or every variety of movement. And human love demonstrations could be also included in such categories. During the conjugation the two ciliated Infusoria are always joined together at the mouth aperture for from twenty-four to thirty-six hours in *Paramœcium aurelia*, and five or six days in *Paramœcium bursaria*, then little by little they shift until they meet length to length but still buccally joined. The changes effected appear to be confined to the nucleus and nucleolus. The physiological condition of the nucleus excites the Infusoria to copulate. Parasites in the nuclei destroy the sexual function.

The attractive principle in the human instance will be isolated by future chemical research along Pfeffer's lines. There is acetic acid in the vagina but whether this has any combining influence upon the alkaline spermatic fluid has not been ascertained, at times there are cravings for vinegar pickles, but its significance is usually blended with the pica of hysteria, as the love of chalk, etc.

In an account of the manufacture of nitro-glycerine⁴⁷ in Scotland, the beauty of the girls in the factories is ascribed to the clearness of skin caused by breathing the fumes of the compounds, and you also learn that the girls marry quickly after entering the factory. The workers are more than usually romantic in their tendencies "and enquiring Pickwicks have taken many notes thereupon in which the statistics of marriage and population are not entirely neglected."

⁴⁶ Archives de Zoologie Experimentale, 1873, Vol. II.

⁴⁷ McClure's Magazine, Aug. 1897. H. W. Dam.

Nitro-glycerine acts as a heart stimulant and also as an aphrodisiac. It is probable that most organic compounds of the recent therapeutic restorative kind have these properties of nitro-glycerine, and further corroborate theories of vital chemistry.

Densities of sperm differ, the frog's fecundated eggs rise to the surface of the water, while those of the salmon sink to the bottom of the stream, and the male elements differ in density otherwise. Both testes and ovaries may remain in the abdomen of birds and reptiles, but in mammals the scrotum is pendulous and holds the testes which gradually descend into it in the course of development, except in the instance of defective descent, as cryptorchidism or hermaphroditism. The yolk of the egg is stored up material upon which the chick may build up further, and the ovary merely abstracts from the blood at the proper instant and sequence the necessary chemical substances needed to lift the embryo higher in the evolutionary scale. Fishes that descend to the sea to spawn are rare. The eels do so, showing marine origin. Most fishes either slowly or rapidly ascend rivers from the sea to lay eggs, while others cannot leave the sea or the fresh water in which they live.

In many animals and some low savages the basic desire does not appear to have associated sentiments which among civilized is called love, which varies with individuals and often consists of higher affection as sympathy of various sorts, admiration, the play instinct, vanity, the feeling of ownership, the gregarious instinct and later combined with joint ownership of children in the parental feelings, etc. The Sandwich islanders did not know what was meant by virtue and regard it as meanness. Morality was unknown to them and promiscuity is in their case seen to be common to this type of savage though other South Sea islanders have developed beyond this low animal stage, but it is not necessary to go back to animals to trace the rudiments of marital union. All sorts of matings may be seen among peoples ordinarily regarded as monogamous. There may be polyandry, polygamy and promiscuity, and rapid divorces sometimes disguise conditions from those unaccustomed to think except superficially. The occasional complete separation of all sentiment from the mere sexual act is plainly evident in the case of a female detective luring a person to arrest

or an entrapment for blackmailing purposes. The desire for gain may predominate in the marriage of convenience. Outrages are reversions to the earliest methods among aborigines and fear was the principal emotion on the part of the passive subject.

Examine an ascending scale of animals and the reproductive organs will be seen to have developed from the intestinal tract. The bird still uses the common cloaca for its egg exit and the Fallopian tubes or oviducts enlarge at their lower ends and finally join to form the uterus, as the aorta is from fixed arteries that are separate in the unborn and in our progenitors, and as the bladder is also built up from enlarged and fused ureters. The partly double uterus of the cat family shows incomplete development in this direction, the bicorned uterus of the felidæ.

Even in human beings the sympathetic nerves control indifferently the colon and uterus so that tenesmus and uterine congestion are associated and a drug like aloes will act to some extent upon the general pelvic sympathetic uterine as well as colic distributions, indicating the primitive relationship of the reproductive and intestinal organs. The apposition of ani observed in birds and reptiles would develop the accessory organs, as the sting of some insects becomes the ovipositor of others and helps to place eggs in their resting places in the tree or ground, and the shark claspers later becoming a penis or clitoris, the latter being a mere homologous rudiment. The passive ovum attracting the more active semen could through vast ages build up the erectile male organ to carry the sperm nearer the egg.

We are accustomed to regard offspring as copies of their parents and this is quite the customary result of pairing and is called homogenesis, or the male or female children resembling the parents. But there are other methods of genesis one of which is known as heterogenesis when the plant or animal fails to resemble its parents but may resemble its grandparents, and still another form may resemble neither ancestor. Gamogenesis is the name of generation by sexual union. Agamogenesis is where there is no sexual union necessary to produce offspring. That is, the child may have but one parent. Homogenesis, or like males and females producing similar males and females as offspring is universal among vertebrates and most invertebrates. Viviparous

genesis is where the young are born alive and oviparous where the egg is first laid. Where propagation is by heterogenesis there is always absence of sexual union with occasionally recurring sexual genesis, agamogenesis interrupted by gamogenesis. Huxley's classification of development is that it is either continuous by growth or metamorphosis, or it is discontinuous by gamogenesis or agamogenesis, and this last is divisible into metagenesis or parthenogenesis. Where reproduction is from no special organ but from the body direct it is metagenesis and this may be from outside or inside the body and hence called external and internal metagenesis. Von Siebold defines the parthenogenesis as the power possessed by certain females of producing offspring without sexual union with a male. An artificial but rather dubious parthenogenesis is claimed, that is a chemical impregnation that will take the place of the male element.⁴⁸ There are other divisions which are well demonstrated, these are the pathological, occasional, seasonal, juvenile and total. In three distinct sets of animals, rotifers, crustaceans and insects, parthenogenesis is a confirmed habit. An instance of the pathological is known in surgery as the dermoid cyst, a tumor containing teeth, hair, bones, etc., an imperfect fœtus, growing in an unimpregnated person.

Parthenogenesis is agamogenesis carried on in a special reproductive organ or the semblance of one by false ova. That is, while there are regular organs in many animals and plants in which the reproductive process, homogenesis by gamogenesis, can be carried on, there are degenerate organisms with rudimentary ovaries or testes or their equivalents in whom development proceeds to a certain stage for offspring without the male parent contributing to the generative material. Agamogenesis with occasional gamogenesis resulting in heterogenesis with occasional homogenesis, indicates the influence of a change of environment upon a low type of life, so that regular sexual union had developed with offspring resembling the parents, but the ancestral hermaphroditic method of generation would recur with offspring still further reversionary or resulting a generation further back, owing to the lifting influence not being constant or sufficiently strong to overcome the

⁴⁸ Geddes and Thompson, *The Evolution of Sex*, Humboldt Series, N. Y., 1889.

older methods of propagation. In generation by eggs laid, oviparous, the fertilized germ leaves the parent, undeveloped. The viviparous, or born-alive offspring, is better developed because retained longer in the mother and higher molecular arrangements are built up before it leaves the parent. But the line is not sharply defined, for some animals may have offspring by both methods. As a rule also parental care prolonged within reasonable limits marks the higher animal. In mammals, the highest vertebrates, viviparous homogenesis is the rule. Birds are always oviparous and reptiles are nearly always so. Oviparous homogenesis is the rule in arachnida (the spider family) except in scorpions, which are ovo-viviparous, that is, both methods are present; also universal in crustacea (like crabs, lobsters, etc.) except the lower kinds. It is universal among insects and molluscs, except low species of shell fish. If we start with males and females in agamogenetic cases we encounter occasional eggs or seeds that are neither male nor female, but that produce the next generation by buds. The relationship of growth to seed production is observable when gardeners suppress the seed to form other parts of the plant and when the plant is allowed to "run to seed" and becomes useless in other respects.

Sex is determined in a child before birth by the internal nature of the ovum wherein the male or female molecular construction aggregates according to the kind of nutriment afforded by the maternal fluids. Bees directly create sex by nectar fed to a neuter insect so that it is a chemical matter, a difference of molecules akin to the difference between H_2O and H_2O_2 . The older ideas were that comparative vigor had much to do with the sex determination, as strength produced males and weakness, relatively, females. Darwin's man was a developed woman, while Spencer's woman was an arrested man, but neither view is necessary in regarding them as differentiated forms of an original type which, though never real, existed theoretically. The reason why there are usually about the same number of males and females was worked out by Düsang on mechanical principles which preserve the balance of sexes. If a sex is in the minority then a majority of that sex will next be forthcoming. If, for instance, a majority of males there is greater likelihood of the ova being fertilized early and that

means a preponderance of female offspring, and thus the balance is restored. His assumption being that young, immature females or youthful marriages produce female children, and strength or maturity of parents, especially the mother, would ensure male offspring as a rule.

The influence of nutrition in generation is undeniable. Schenck of Vienna advanced the idea that when the mother was well fed upon sugar the offspring would be female, otherwise a male, but facts proved his incorrectness. From analysis in cell construction that the sperm cell is more highly differentiated than the germ cell the indication would be that changes in the environment were availed of more in the male element building of a more complex organism than the ovum required, which can be considered as a reservoir of simple molecular construction, the sperm cell being qualitatively the germ cell quantitatively developed. Hence when a war has cut off many males and male children preponderate thereafter to establish an equality of sexes it appears that changes in the environment caused by the war enabled a higher development of sperm cells determining the male children preponderance of births. So it would be the change in food and habits that would enable the sperm cell to develop beyond the ovum, increasing the likelihood of male offspring. The little there is in Schenk's idea is that surfeit enables the ovum to develop quantitatively, but the higher or lower molecular construction of the male element would determine the sex, independently.

An old fashioned method of ascertaining sex pre-natally was by counting the foetal pulsations. The more rapid female pulse indicates less difficult circulatory channels, the slower male pulse points to increased numbers of avenues and more complexity of the organs to be nourished.

There is a wide range in the variety of ways in which procreative desire operates not only in the entire animal kingdom, but in a single species, nor is the human family exempt from this variability. Havelock Ellis sums up⁴⁹ the current theories of the impulse or instinct. One of these regards it as an impulse of evacuation, the joy of relief of excretion is sometimes extreme.⁵⁰ A lady

⁴⁹ *Alienist and Neurologist*, Apr. 1900.

⁵⁰ *Comparative Physiology and Psychology*, 1883.

said her relief after a long delayed bladder evacuation was "like heaven." Ellis says that the analogy between reproductive desire and impulse to evacuate is striking, that the preliminaries are often a part of the enjoyment, nor is the glandular discharge necessary to the enjoyment, and the theory of evacuation is hopelessly inadequate for women, owing to the trifling amount of mucus from the glands. Between the act and evacuation there are many differences, waste material is absent in one and present in the other; retention is a disadvantage in one and an advantage in the other. The maternal nursing, however, affords gratification and is an excretory act. Hegar and Eulenburg's desire for offspring theory is absurd in this connection. Moll⁵¹ holds to two separate components as uncontrollable impulses. The instinct of detumescence or ejaculation, like the impulse to empty the bladder, the other is the impulse to touch the other, as a secondary character.

The variability is partly due to first impressions occurring at the time of the awakening of the instinct. The memory and nervous system become by association of two or more impressions habituated to compound experiences. The method and surroundings of a first performance may within the range of the normal or sometimes outside of it fasten a certain recollection indelibly in connection with future experiences, and this law of associated experiences is all the more potent when there is an inherited diseased impressionability, as in perverts or other insane. Involuntary ejaculations are based upon accumulations neglected or forming too fast as in puberty or when the vital fluids are superabundant. As age advances this liability ceases, as well as the possibility of a mental impression sufficing to create the orgasm. It is during the period of greatest reproductive activity that either the normal or abnormal peculiarities are most frequent and imperative, an overflow of nerve force into channels of first experience if repeated many times finally adopt such channels to habitual modes, showing the need of early antagonizing of pervert tendencies. A youth nearing puberty accidentally encounters the experience while running or climbing and thereafter he is apt to have repetitions of this under similar circumstances. At the instant of rev-

⁵¹ Untersuchungen über die Libido-Sexualis.

elation in the young the potential channels in the peripheral nerves, the spinal cord and brain are profoundly shocked, in a never-to-be-forgotten way, and vivid recollections of the event itself and the associated events as well will be recalled on very slight provocation throughout life. The powerful nature of association in all animal existence can thus account for the mutations of the methods of genesis and the transference of methods of manifestation in the evolutionary scale from two molecules attracted chemically to fish sperm and ova, and the personal interest of the fish being feebly or strongly aroused in the fusion of the elements and eventually the odor excitement in dogs and ocular attraction in bimanous animals. Exactly as there are two contending forces in all nature, in inheritance and variation, so a fixed method of conjugation of a genus or species may be departed from by individuals and the new method may extend to a species and become established as normal, until it supplants what was customary for the primitive ancestry.

Perversions may originate in appeals to certain senses being so vigorous as to overwhelm the ordinary experiences of the race or species. Chemically a low animal or plant can be conceived as perverted by a molecular accident equivalent to a deformity or poisoning of its substance to a degree that will cause it to be attracted strangely and repelled from that to which its companions are attracted, and atomic inversion may be conceived in a hydrogen atom preferring hydrogen to oxygen, some defect in the atomic construction causing this.

In Japan the social evil is not regarded as in Europe, if necessity drives to it, the proceeds are brought to the family support and the act is considered praiseworthy. But in our own Virginia mountains the "crackers" hold meetings occasionally in which dogs, horses and wives are "swapped." The expression "morganatic" also signifies that hereditary rulers may be above the law, which is made for the common people, "left-handed marriages" to be set aside when selfish state considerations demand are justified for monarchs. Occasionally a royal lover will give up everything for the sake of affection, but more often love is forsaken for grossly sordid reasons by those near the throne or who sit upon it.

Rome and Greece, and later France under Louis XIV and XV,

afford instances of the decadence of people giving way to luxury and sensuality, and the genesic erethism of old, broken down monarchs present revolting lessons that should teach self-control and contentment with humbler stations in life. The Pall Mall Gazette at one time gave startling revelations of the excesses among wealthy roués. Debauchees appear among the two extremes of the very rich and the very poor. The abandoned, wretched poor of Naples, uncared for, uninstructed, are left to their animal natures, and even the churches forsake them. Absence of desire (*anæsthesia sexualis*) may be present throughout life, usually in instances of sluggish vitality, and it may also occur after excesses or through great revulsion of feeling and in the course of advancing age. An increase, however (*hyperæsthesia sexualis*) may also occur in consumption and in a senile reawakening, as in the approach of senile dementia leading to unfortunate complications, as of aged men mistreating young children, and in others there may be pæderasty or even bestiality.

Erotism even in the insane, may be seemingly independent of the basic faculty, for an adored one may be idolized without reference to the grosser passion, and, indeed, there may be repugnance to this while the ardor otherwise is unmistakable. The exaggerated inclination is known as satyriasis in men and nymphomania in women, and these are commonly observed in mania as one of the consequences of the stimulated general functions of the body, the senses, emotions, intellect and bodily functions being exalted in activity.

Animals have been known to suffer perversions, as among the insects known as the coleoptera, which are considered normally perverted or inverted. There is an instance of a donkey becoming exclusively attached to a cow. The desires for food and reproductive indulgence are the two main perversions. Insane women may indulge in obscene language and accusations against others to suggest their own exaggerated desires, and the dreams, delusions and hallucinations of the insane are often filled with ideas of grotesque natures called demonomania by the ancients; in some of these perturbed mental states the patients declared that incubi or succubi according to the sex of the demon, would visit them

nightly with their annoying attentions. Krafft-Ebing⁵² defines sexual perversion as a *paræsthesia sexualis* or inclination to persons of the opposite sex with perverse activity of the instinct. And precisely because this perverseness of activity is the cause of the discovery of the trouble, so perversion may, in my opinion, be greatly more prevalent in minor degrees than writers on the subject have been able to determine, for the perverse activity may be absent in these minor cases. The exaggerated influence that the axillary effluvia may have in some instances shows the reversionary olfactory impressionability.

Sadism is the name given to the perversion in which there is an association of active cruelty. Krafft-Ebing enumerates these as pervert murderers, mutilators of corpses, those who injure women by stabbing or whipping and those who defile or degrade them or make other attacks upon women (symbolic sadism), as where one took pleasure solely in cutting a girl's bang, or another in combing a woman's hair; another would shave a girl's face with lather and a razor; another took pleasure in seeing a woman's face wrapped up as though for toothache; some lick boots of the women and one kisses the great toe, while others are inclined to public osculum ad nates. Another division of sadism is in the delight of seeing boys whipped. There is sadism with animals, a gross instance being in the Chinese treatment of geese. Sadism in women is not frequent, but when it does exist it may be considered as a masculine primitive trait reverted to, and so constitutes not only perversion but a primitive inversion, if the extreme cruelty can be regarded as somewhat exclusively masculine. Spitzka⁵³ mentions the cannibalistic or analogous perverseness confused with sexual desire. "Several of the Cæsars, a family which presented numerous examples of transmitted mental disorder, delighted in seeing maidens slaughtered from sexual motives." He also refers to instances cited by Lombroso, and the scene of revolting murders in Westphalia of young girls who had been violated.

Spitzka further observes: "It is to be insisted here that even these terrible aberrations may exist as combined results of a

⁵² *Psychopathia Sexualis*.

⁵³ *Insanity*, p. 42.

vicious inclination and cynical brutality in persons not insane." The term anthropophagy, as indicating a morbid perversion of the appetite, calling for the satisfaction of murderous and cannibalistic desires, should be limited to those cases where there are signs of heredity, somatic evidences of degeneration, and other manifestations of a faulty nervous system. In one such case Esquirol found in the executed monster, Leger, gross brain disease of the kind sometimes discovered in the insane. Necrophilism is a name given to the propensity to violate dead bodies, which rarely recurs in periodical insanity. Garnier⁵⁴ regards emotionalism as a true stigma of degeneracy, and holds that cruelty and ferocity may be but a brutal yielding to voluptuous frenzy. The sadist connects suffering with the sensation and can only enjoy by being cruel. Sadists are of every grade, from those who perform silly acts of minor cruelty to monstrous crimes, like those of the Whitechapel murders, assassination, mutilation, anthropophagy and necrophilism.

Masochism is the association of passively endured cruelty and violence. The desire is directed to subjugation and abuse by the opposite sex and, with modifications, occurring as a pathological state in a few men and as a physiological normal state most often in women, though not recorded as masochism, points to its derivation from far-off savage times when primitive brutal men-apes ferociously attacked women, with defective differentiation between the food and procreative appetites, so that these early men were naturally sadists, and early women were masochists, and associated the pleasure and suffering of eating and being eaten and of reproductive ferocity and capture. This desire for abuse and humiliation as a means of sexual satisfaction is observed in the felidæ, the lions are like the cats in their bitings and embrace, the female cat apparently suffers from the male ferocity but alternately fears and seeks the experience.

One masochist required defecation in his face at the critical instant; another suffered oral urination; one carried a strap to be flogged with and a divorce was secured by a woman with a family of children when she discovered her husband's morbid impulse caused him to drink large quantities of excreted renal fluids.

⁵⁴ Alienist and Neurologist, October, 1900.

Lord Cornberry, a cousin of Queen Anne, appointed governor of New York, was a degraded hypocrite, devoid of moral sense, who dressed himself as a woman and paraded the streets with libidinous gestures. It is of medico-legal importance that while perversions may be accompanied by bloodthirsty exhibitions, inversions are especially dangerous in this regard, the jealousy of inverted affection mounts to destruction of its victims before it can be satisfied. According to Bancroft,⁵⁵ homosexual practices occurred among American Indians. Sodomy prevailed among the Aztecs and Mayas, and inverts were occasional among the Tupi Brazilian tribe, women dressing like men and acting like them, and sometimes a man would forsake the company of his own sex to do women's work only. An actress in the United States was noted for her mannish behavior and likings; she dressed as nearly like a man as she could, in hat, vest and coat, and her example has been followed largely by men-women generally. The basis of this sort of inappropriate dress is inversion, or the partial inversion of hermaphroditism. Alice Mitchell killed Freda in Memphis, Tennessee, by cutting her throat and on the witness stand Alice wept for her lost love. She was sent to an asylum as insane. Another instance similar to this occurred in the murder of a female attendant at the Elgin, Illinois, asylum by an invert woman who loved the attendant. A prominent Chicago surgeon was an invert whose grosser exhibitions were made when intoxicated. Some of these inverts write ardent love letters speaking of themselves as feminine. The ancient Lesbian love was of this nature. Homosexuality is defined by Krafft-Ebing as a great diminution or absence of feeling for the opposite, and a substitution of desire for the same sex, a contrary sexual instinct. He considers that it may be acquired and be a simple reversal of desire, or a complete change of character, and he becomes a female in feeling, or a woman may become a male in feeling. This inversion may also be congenital where there is either homosexuality only or heterosexuality with predominating homosexuality (a psychical hermaphroditism); another division would be effeminacy (as among the so-called Miss Nancys), and still another sort have body differences from those of their own sex ap-

⁵⁵ Native Races of the Pacific Coast, Vol. II, pp. 467, 774.

proaching without being complete reversals of sexual features. These homosexual individuals were known as urnings and the man-woman, woman-man, anatomically or physiologically, were classed under androgyny and gynandry. The great danger in these inversions is their liability at any time to become imperative and murderous. The fault lies in an embryological error. Homosexuality may commingle all the other perversions with erotomania. Apprehension of punishment never restrains perverts.

Fetichism, in this study, is a special term to designate the association of desire with certain portions of dress or of the person. Binet concludes that in the life of every fetichist there may be assumed to have been some event which determined the association with the single impression, such as could occur during early youth and the first awakening of the *vita sexualis*. Among male fetichists there are those who adore a part of the body, as a hand or foot, and inclinations are aroused by seeing such parts, and there are hair fetichists who are aroused by seeing or feeling this part, liking to comb it or stroke it, and another sort are unduly excited by articles of attire, especially underclothing, or handkerchiefs; but a common perversion of this sort is among the shoe-stealers. These imperative impulses compel them to steal women's shoes, sometimes snatching them from their feet. This paræsthesia of the instinct depends upon some determinant to arouse the complete feeling. In one case a pair of red shoes had to be worn by the woman and in another black stockings, as in both of these the earliest impressions were associated with articles of that sort. It is an attempt to recall a strong impression aroused at the time of first excitation and is psychologically an association memory. There may be indifference to ordinary means of exciting the function and a detail takes the place of the whole. Fetichism may substitute parts of the person, either uncovered or covered. It is an obsession, and is divided into corporeal or impersonal, giving to parts or objects the exclusive power of producing the orgasm, the fetich being directly or by mental representation the element at once necessary and sufficient for excitation. The sadi-fetichistic hair-clipper experiences the orgasm when he acts violently, and by consequence mutilates the object of his fetichism. One case in Chicago committed suicide and his brain was

said to have been injured when he was young. Flagellants or whippers may be sadi-fetichists. There are those who stick pins or needles into the glutei and cut the ears of victims. Vampirism and necrophilism are the worst. Sadi-fetichists may be corporeal or impersonal. As in ordinary fetichism the desire beholds an object which can alone awaken the orgasm, but only on the condition that the fetich be subjected to violence and be torn, broken, soiled, burnt or otherwise destroyed.

Oralists are extremely common and may be regarded as fetichists in a certain sense, but all these perversions shade off into each other, as can be imagined when the central idea in all is the one event. The fetichist who finds gratification in gently combing woman's hair and the other who loves to cut girls' bangs is simply a mild sort of sadist, and the worst sadist is a violent fetichist.

Dr. A. R. Reynolds reported a case of sexual perversion of a peculiar kind,⁵⁶ in which a man who had married a one-legged woman became after her death perverted with regard to that condition. He sought out one-legged women and spent considerable money upon them in securing artificial limbs for them and by handling the stump of the leg he derived his only gratification. Right leg amputations were the ones he preferred. This could be called personal or corporeal fetichism with a tinge of sadism, and association at an early period of the *vita sexualis* of the act with the personal peculiarities was the cause of this perversion.

Exhibitionists are a strange group of perverts who may or may not be insane in the ordinary use of the term. Lasegue found that the exhibitionists comprise demented, epileptics, parietic demented, idiots, alcoholics and impulsive or obsessed types as well. Sometimes the exhibition is unconscious, but often it is an equivalent to the act or its approach with all the agonizing struggles against it of the impulsive obsession. These perverts may be frigid but compelled to exhibit themselves at intervals with paroxysms and remissions. They are mentally twisted. Impulsive exhibitionism is a pervert obsession and impulse, characterized by an irresistible tendency to exhibit, in public generally, with a fixity of hour and place; there may be flaccidity, without appearance of

⁵⁶ Meeting Chicago Medical Society, Nov. 1888, reported in Western Medical Reporter Supplement.

lasciviousness, the accomplishment of the exhibition ending the agonizing struggle.

The doctrine of evolution offers us solutions not only for morphological and physiological problems but also explanations of psychological phenomena.

It is evident that if species are mutable, if forms change one into the other, then the peculiarities of the more remote or earlier forms may be inherited by the latter, and that pathological mental states are often reversions to the characteristics of progenitors. For this reason we find in the majority of insane, that the emotions, brutal ferocity and sexual peculiarities of lower animals exhibit themselves, because the later acquired intellectual traits, which held grosser mentality in check, are, during the insanity suppressed. Tracing all animal life back to primitive forms such as the monads and amœbæ, modern biological science studies the life history of these low organisms and reduces physiological processes to their simplest expression.

In Science (N. Y.), June 1, 1881, I published the following, and later included it in my "Comparative Physiology and Psychology," published by A. C. McClurg & Co. The London Journal of Mental Science mentioned it as a "well reasoned out theory," and commended it to all students of mental disease.

A paper on "Researches into the Life History of the Monads," by W. H. Dallinger, F.R.M.S., and J. Drysdale, M.D., was read before the Royal Microscopical Society, December 3, 1873, wherein fusion of the monad was described as being preceded by the absorption of one form by another. One monad would fix on the sarcode of another and the substance of the lesser or under one would pass into that of the upper one.

In about two hours the merest trace of the lower one was left, and in four hours fusion and multiplication of the larger monad began. A full description of this interesting phenomenon may be found in the Monthly Microscopical Journal (London), for October, 1877.

Prof. Leidy has asserted that the amœba is a cannibal, whereupon Mr. Michels, in the American Journal of Microscopy, July, 1877, calls attention to Dallinger and Drysdale's contributions, and draws therefrom the inference that each cannibalistic act of

the amœbæ is a reproductive, or copulative one, if the term is admissible.

The editor (Dr. Henry Lawson) of the English Journal, agrees with Michels.

Among the numerous speculations upon the origin of the sexual appetite, such as Maudsley's altruistic conclusion, which always seemed to me to be far-fetched, I have encountered none that has referred its derivation to hunger.

At the first glance such a suggestion seems ludicrous enough, but a little consideration will show that in thus fusing two desires we have still to get at the meaning and derivation of the primary one—desire for food.

The cannibalistic amœba may, as Dallinger's monad certainly does, impregnate itself by eating one of its own kind, and we have innumerable instances among algæ and protozoa of this sexual fusion appearing very much like ingestion. Crabs have been seen to confuse the two desires, by actually eating portions of each other while copulating, and in a recent number of the Scientific American, a Texan details the mantis religiosa female eating off the head of the male mantis during conjugation.

Some of the female arachnida find it necessary to finish a marital repast by devouring the male, who tries to scamper away from his fate. The bitings and even the embrace of the higher animals appear to have reference to the derivation. It is a physiological fact that association often transfers an instinct in an apparently outrageous manner. With quadrupeds it is clearly olfaction that is most related to sexual desire and its reflexes, but not so in man. Ferrier diligently searches the region of the temporal lobe near its connection with the olfactory nerve for the seat of sexuality, but with the diminished importance of the smelling sense in man, the faculty of sight has grown, to vicariate olfaction. Certainly the "lust of the eye" is greater than that of the other special sense organs among bimana.

In all animal life multiplication proceeds from growth, and until a certain growth, puberty, is reached, reproduction does not occur. The complementary nature of growth and reproduction is observable in the large size attained by some animals after cas-

tration. Could we stop the division of an amœba a comparable increase in size would be effected.

The grotesqueness of these views is due to their novelty, not their being unjustifiable.

While it must thus seem apparent that a primeval origin for both ingestive and sexual desire exists, and that each is a true hunger, the one being repressible and in higher animal life being subjected to more control than the other, the question then presents itself: What is hunger? It requires but little reflection to convince us of its potency in determining the destiny of nations and individuals and what a stimulus it is in animated creation. It seems likely that it has its origin in the atomic affinities of inanimate nature, a view monistic enough to please Hæckel and Tyn-dall. Dr. Spitzka, in commenting on the foregoing in the same journal, June 25, 1881, says:

"There are some observations made by alienists which strongly tend to confirm Dr. Clevenger's theory. It is well known that under pathological circumstances relations obliterated in a higher development and absent in health, return and simulate conditions formed in lower, and even in primitive forms.

An instance of this is the pica or morbid appetite of pregnant women and hysterical girls for chalk, slate pencils and other articles of an earthy nature. To some extent this has been claimed to constitute a sort of reversion to the oviparous ancestry, which, like the birds of our day, seek calcareous material required for the shell structure in their food. There are forms of mental perversion properly classed under the head of the degenerative mental states, with which a close relation between the hunger appetite and sexual appetite becomes manifest.

"Under the heading 'Wollust, Mordlust, Anthropophagie,' Krafft-Ebing describes a form of sexual perversion where the sufferer fails to find gratification unless he or she can bite, eat, murder or mutilate the mate. He refers to the old Hindoo myth Civa and Durga as showing that such observation in the sexual sphere were not unknown to the ancient races. He gives an instance where, after the act, the ravisher butchered his victim and would have eaten a piece of the viscera; another where the crim-

inal drank the blood and ate the heart ; still another, where certain parts of the body were cooked and eaten.⁵⁷

The London scientific weekly, *Nature*, in reprinting my article, quotes Ovid: "*Mulieres in coitu nonnunquam genas circumvicemquæ maris mordunt.*"

Eighteen years later Roux adopted my hunger theory and spoke of sexual hunger affecting the whole system.⁵⁸

Bloodthirsty and other abnormal hunger developments could be expected to appear in defectives when the sexual feelings were excited. The *Madchen-Schander* of Leipzig and others had ejaculations upon wounding women with lancets. The original "blue beard," Gilles de Retz, in the eighteenth century, murdered female children in a wholesale manner and in the midst of blood resulting from his mutilation he had intercourse with his victims. He charged his crimes on the perusal of Suetonius' work, "*The Twelve Cæsars.*" Many criminal assaults of negroes in the southern states of America are of a comparable nature.

As for the origin of these manifold perversions no single explanation such as reversion or atavism will suffice, in all cases, for in simple fetichism, personal or impersonal, the memory is for all subsequent time impressed with a group of associated experiences at the critical and exceedingly impressionable instant of the tremendous physiological excitement of a new and unexpected sensation. Association is much more potent in memorizing generally than is supposed, and in some the power to disassociate is not so well developed. Persistence in yielding to the repetition of the original impression would tend to fix and intensify it, while opposition to it would help to break it up. This associative origination is quite apparent in the case cited by Reynolds of the infatuation for women with one leg, and can be observed in many similar cases. Many normal persons, however, value any object that recalls the loved person and this may be regarded as a healthy process of association, the abnormal consists in concentration upon one object or incident. If sodomy is reversionary it is to cloacal apposition of reptiles, but it may be regarded as a substitution

⁵⁷ Ueber genisse Anomalien des Geschlechtstriebes van Krafft-Ebing, *Archiv. fur Psychiatrie*, VII.

⁵⁸ *Psychologie de l'instinct sexuel*, 1899, pp. 22, 33.

and not a reversion, for heterosexuality is not always interfered with by the depravity, though sometimes this is the case, especially in inverts. Inversion is plainly mental hermaphroditism, and it is instructive that function thus may defy the presence of organs for a complementary function.

Sadism is clearly atavistic to brutally savage ancestry, probably remoter than the ape-like man stage. The cat family exhibit much of this ferocity and the female cat is masochistic. Then sadism would pertain to reversion to brutal male states and masochism to submissive female states, such as slaves even in modern times have been compelled to experience in all its degrees, and if there is anything that would afford opportunity for the developing of sadism it would be when slavery was sanctioned and regarded as divinely ordained. One of the most instructive conditions, to my way of thinking, is that of exhibitionism. It appears to me to plainly unravel what would be a tangled snarl in finding the thread of evolution of the sexual processes. The act of spawning in the presence of the male fish and the act of fecundating with sperm by the male in the presence of the female fish are almost identical processes to exhibitionism, not analogous but homologous, and just as the human foetus may have gills and the cardinal system of blood vessels of a fish, so may the adult retain fish exhibitionist propensities of sexual manifestations as a failure of development, as a teratological characteristic, precisely as branchial fistulæ, or openings in the neck of an adult, point to the failure of the fish gills to be retrograded normally, and as ichthyosis, or the scaly epidermis, occasionally develops on the back of a human being.

We are now prepared, I think, to trace the development of the sense in both sexes from its origin not only up to and through the simian phylum but throughout every ramification of animal life. Starting from the fusion of two cells which pass into the resting stage and then undergo segmentation and multiplication of the original cells we have the initial fusion very much like ingestion. This could be considered as the hunger stage of the function which later develops or differentiates into the sexual stage by special organs differentiated from the intestinal tract, and the hunger may reside in these organs alone and not influence the

owners of the organs in some lines of creation. The lamprey eel propagates by contact, but that is no reason why the eel-like progenitor of both the lamprey and the fishes should be regarded as doing the same thing, we see that the ova and sperm elements unite without contact of the fishes by a process of exhibitionism, so that this is a stage in the development of man to which some imperfect persons revert. Finally the fetichistic association occurs with the development of the nervous system and special senses such as tactile, olfactory and sight, until simultaneous excitation of these senses became an accompaniment of the performance. The exhibitionist fish may to some extent be fetichistic with regard to the spawn ocularly, and so we have fetichism reversionary and connected with exhibitionism by easy stages. The behavior of eels in conjugation suggests sadism and female spiders are undoubtedly sadists.

It is not necessary to include sodomy as atavistic or as a step in evolution, for with the natural selection of an intromittent organ which can bring the sperm elements closer to the ova which are less active and the accessory apparatus growing from the greater activity of the semen as compared to the relatively quiescent ova, the apposition of any and all these special organs is directly traceable to cloacal anal junction. Sadism is allied to the cannibalistic behavior of many low animals, crocodiles and salmon among such as eat their young, and sadism during or after conjugation is doubtless far more common than is recorded. Masochism is the complement and accompaniment of sadism when it is voluntary, and extends with sadism from early brute days to human slavery and bandit times, the slayer being more common than the one who desires to be mutilated, and if this sadism occurs in a female and masochism in a male then there are inversions in addition to the perversions. A faulty development which transmits the instincts of one sex with the organs of another need not be regarded as going back as far as to the extremely remote bisexual ancestry; it can be allied to dextrocardia as teratological. Among so many complete males and females it is no wonder that here and there androgyny and gynandry occur and sometimes a masculine and feminine intellect is misplaced.

A bookseller named Bedborough, May 31, 1898, was brought before Sir John Bridge, at the Bow Street Police Court, for selling a scientific work on sexual inversion,¹ written by a famous criminologist, Havelock Ellis. Notwithstanding the clear evidence that the book was not written to pander to prurience but to add to our knowledge of an important anthropological subject, Sir John immortalized himself as mistaken and as not being influenced by *honi soit qui mal y pense*, and condemned the book as tending to corrupt the morals of her majesty's subjects. The foremost scientists interested in mental disease in America, England and Europe uniformly express indignation at this cant and playing to the galleries, or as Shakespeare would put it, "splitting the ears of the groundlings." With this precedent and notwithstanding the fact that German works such as Krafft-Ebing's *Psychopathia Sexualis* and some French writings use much plainer language, I felt impelled to resort to technical terms in discussing this delicate subject so that the work may not exceed the limits of liberty to express opinion which we regarded as better in England and America than elsewhere. The time may come when anything ordinarily spoken of as made by God may not be considered too vile to mention. Prudishness is usually hypocritical and intended to cover a vulgar nature. Nature cannot be understood if part of it is hidden from sight. I have endeavored to avoid unnecessary plainness in dealing with the important subject.

CHAPTER X.

ACQUISITIVENESS.

"Master, I marvel how the fishes live in the water?
Why, as men do a-land: the great ones eat up the little ones."

Pericles, Act II., Scene I.

The many ways in which the desire to grab may make itself apparent point to its universality and show that it is deeply rooted in nature. The way of the world is to get things, whether by fair means or foul, regardless of the end or means being good or bad. Tribes grab territory, kings grab thrones, the people either snatch from one another or adjust to a condition of give and take, evolved from the primitive grab method. Priests clutch the tangible money of the multitudes and promise to pay in intangible immortality. Inorganic chemical substances are grabbed by the plant to promote its growth and the animal eats the plant and in turn is eaten. In short, the history of the universe and of all life consists in endless differentiations of the game of grab. Atoms grab to form molecules, the latter grasp one another and new affinities begin. Cells are formed from molecules and these form plants and animals. The differentiation is in the relinquishment of the lower grabs for a developed idea of what is more desirable, and these ideas are not the same with all, for one prefers cash, another science, another, like the Indian, cares for food, or another may be "other-worldly" in his desires.

Every cell is absolutely selfish and never passes on to another cell what it can take itself. As Schopenhauer says, "And yet when all is told man has been struggling for the very same things as the brute has attained." You cannot repress the grab instinct in human nature, nor can you disguise it in tyrants who seek perpetual power to grab, and plan to destroy all who oppose them. The lives of plants and animals reveal that selfishness is a necessary law of nature, and that there are grades of selfishness. It

seems a hard thing to admit, but facts should be looked at squarely. A pack of hungry wolves eat their own wounded.

Animals are provided with prehensile organs developed upward from where the entire substance envelops the food toward such structures as hands, feet, ribs, lungs, stomach, etc., to enable better grasp of food or air or to enable movement over the earth's surface in search of food.

The grasping desire is never differentiated out of existence for the reason that as atoms group to form molecules their new affinities may differ from the former or older affinities, that is, the atoms newly grouped may desire new things, and as molecules pass upward in complexity of grouping from the inorganic to the highest organic series, and including all animals as but complexly arranged molecules, the desires of these animals may differ or improve as they ascend the scale of development, but man is never satisfied because no molecule is satisfied if it is possible to enter into new combinations with other molecules. So insatiability is inborn and unavoidable. Sharks' eggs have grasping appendages like the tendrils of some climbing plants so radically and early is the grab propensity developed, and this primitive grabbing desire may survive and be strengthened with but little change from its original state, so that analogically the remorseless money grabber may sociologically be a cancer, for cancerous tissue may overdevelop some structures, without regard to associated parts, which it may strangle, and ulcerate, and it may with indifference cause intense suffering.

When a man falls helpless, as when drunk, sick or wounded, his pockets are liable to be picked. Wild animals fight over their food; men do so in less recognized ways. The starling bullies the thrushes out of what they find to eat and fishes snatch food from each other when they can. The grabbing instinct of most animals has sole regard to appetite, but with the monkey tribe there is often the added mischievous disposition. In the thefts of the Amazon sapajou there is more wasted than stolen. The capuchins are very mischievous and covetous and are great hypocrites in pretending perfect innocence when making efforts to steal food. The gannets are like lawyers in their fighting each other in the

air for food, stealing fish from one another and afterwards roosting together the best of friends.

The macaque of Barbary robs gardens. The wolverine will steal and conceal things of no use to it, such as guns, axes, blankets, etc., and is very cunning in avoiding traps.

Some birds, like the magpie and raven, are attracted to glittering or bright objects like silver or jewels, and resemble in this respect the rubbish-gathering demented of insane asylums. The regent and bower birds have an ornamenting, decorating propensity, and love to display their colored and shiny trophies about their premises, but the miserly raven and magpie hide their stealings.

The snarling and growling of beasts of prey are to dismay others who might grab their food. Sometimes we hear a cat or dog indulge in this ancient method of self-protection, but domestic animals generally have largely outgrown the savagery of their wild progenitors.

A developed species of grabbing occurs in cuckoos, some of which are parasitic, though others build their own nests. Some victimize small birds and some throw or drive the rightful owners from nests which they then appropriate. Some deposit their cuckoo eggs in the stolen nest and break the eggs of other birds to make room for their own eggs, while other cuckoos after being hatched live in peace with the offspring of the host. When the common cuckoo is mobbed by other birds it is owing to its resemblance to the hawk and not through recognition of its evicting nature. The male cuckoos are more numerous and so they are polyandrous and the female does all the courting and there are often fierce quarrels and fights. The female calls to the male and it is instantly answered. They select the bird's nest in which are eggs more nearly resembling their own, though there is variability in the coloring. Crested cuckoos select the nests of crows and magpies with eggs resembling their own, nor do they eject the rightful owners. The Indian pied crested cuckoo lays blue eggs resembling in color those of the babbling thrushes in whose nest it places them. Apparently the young cuckoo ejects the rightful owners when the young are hatched, as the babblers are often seen in attendance upon their parasitic dependents without any of their

own young being of the party; sometimes the cuckoo puts two of its eggs into a babbler's nest, and it is said to break some of the foster parents' eggs to make room for its own. Colonel Butler says that when they discover a nest of a babbler which does not suit them to lay in the cuckoos invariably destroy the eggs already there by driving a hole into them with their bills and sucking the contents. In the Himalayas the hawk cuckoo is parasitic on the babbling thrushes.

The variable color of the cuckoo eggs are according to the bird imposed upon, and colors are hereditary. The golden cuckoo devours eggs of the cape sparrow to make room for its own. The American cuckoo is a great plunderer of eggs of small birds and is said to even devour the helpless offspring. The young koel is black to suit the plumage of the yellow-wattled myna, for they might not be fed were they brown like their mother. But other birds care for their parasites without regard to much resemblance, so this supposition may not be necessary. The Savannah cuckoos pick ticks from cattle, being devourers of parasites and rendering mutual service to the host, but the service is not from generous motives.

This cuckoo propensity is frequent among some human beings of the parasitic class and is always associated with a low degree of intelligence as a rule. At least the disposition to wreck others for the sake of gain was more common in a crude stage of the ape-like man's career if it does not belong to an even lower stage. Certainly impudence and cruel selfishness are essentials to a human cuckoo nature.

This ingrained natural acquisitiveness comes to the front when the mind is deeply impaired, in terminal dementia, the mental graveyard to which all chronic insanities tend. Terminal dementes pick up and secrete rubbish of all kinds such as pieces of worthless broken glass, rags, buttons, pebbles, bright objects, old bones, etc., and the females are worst in this respect. An old negro at the county asylum would gather as much as fifty pounds a week and carry it around in his pockets and shirt bosom, until periodically disgorged by someone. There is a low estimate of values in such cases, a childish preference for glitter. Such things as represent value, like money, would not be regarded except as addi-

tional rubbish. Kleptomania depends upon defective mental control, reverting to the animal inclination to steal.

Novelists like Wilkie Collins cater to the popular comprehension in such novels as "No Name," based upon social grabbings, yearnings and scheming for money, all about as interesting to the philosopher as the capers and bickerings of cats and dogs, and about as sensible. Robert Ingersoll said, "There would be an air bottling company, limited, if it were possible."

Involuntarily yet instantly, and though subsequently ashamed of it, when calamity befalls others the selfish heart asks itself "How can I profit by this?" Hearing of another's good fortune the thought occurs, "What a lot I could do with that amount of money!" Misfortunes we do not care to hear about, especially if likely to entail inconvenience upon ourselves, but good news may be enjoyed as possible participants ourselves.

The world loves people to be good-natured because it expects to take advantage of them. A clerk who was advised to sing at his work said he did not dare to do so for all the other clerks would try to borrow money of him.

Society is divisible into workers, beggars and thieves, whether the society is high or low. "One must live" is the excuse of the smugglers in "Monte Cristo." Hoarding and squandering are animal traits and insanity may bring either to the front. The lesser form of insanity, mania, may exhibit wild extravagance, alcoholic insanity also, but the graver disease, parietic dementia, is similarly inclined to spendthrift habits. In the squandering there is disregard of the future as to hunger, or other privations. The Australian savage is improvident, and so are many animals and civilized people. Thrift is a developed mental state of the more provident sort and is independent of extreme selfishness or generosity, high or low intellect and station in life.

John Fiske¹ remarks the difference between the desire to accumulate on the part of the civilized and the improvidence of the savage arising from his inability to realize the consequences of shiftlessness, so the careless man in money matters is a barbarian to that extent. The happy-go-lucky person may be honest in hop-

ing to be able to pay, or dishonest in not intending to do so. In either case he is not the evolved type of person who tries to see ahead and incur no obligations avoidable. Much imprudence and crime is due to slothful expectation that things will come right some way. The power to form distinct mental pictures of future matters imparts self-control.

The natural snatch and hold-on instinct is evident in young children, who have to be trained, especially in table manners, and to be less selfish. Children raised without other children to share with are noticeably more selfish than others who have been compelled to have regard for their brothers or sisters. And in this we also see how sympathy grows by familiarity. Showmen say that it is a dangerous thing to attempt the distribution of circus tickets or souvenir advertising matters to a crowd of school children, as in their eager selfishness they trample on each other as the Russian peasants did at the distribution of souvenirs when the Czar Nicholas was crowned.

One may have the grab instinct strongly developed in one direction and not in others, and the family or public, one or the other, may see the worst side of the grabber according as his sympathies or fears determine.

In street cars a man may exhibit selfish disregard of others in keeping two seats while others have none. Hotels and steamboats throw away food that would keep thousands of poor in provisions.

Tom Hood speaks of gold, as

“Spurned by the young, and hugged by the old
Even to the verge of the church-yard mold.”

The inexperience of youth leads to recklessness and the recollections of the aged to miserliness. They learn that “there is no such friend as a dollar or two,” and knowing that the young often cast off the aged, heartlessly, the saving disposition indicates thoughtfulness and experience, either acquired or inherited. The anxiety of the senile dement centers in his property, but he has lost the mental ability to properly protect it. Squandering and saving are not exclusively human. In some ways man is often more reckless or more rapacious than other animals.

If some other intelligence were to study man as we study an anthill, he would take him in the aggregate. He would say: This species, spread over almost all the world, numbers about fourteen hundred million, a number less than the infusoria in a cupful of stagnant pond water. Of these about two hundred and fifty million are without a shred of clothing, and seven hundred million are clothed only in their loins. The nude hold a majority over the clad. I believe this bipedal mammal calls himself *homo sapiens*, but taking him in the aggregate the better name would be *homo sylvestris*, for only the more favored have got out of the woods. The creature seems to toil, but he remains poor. He is improvident. He does not "take thought enough of to-morrow." Nearly three hundred millions of the human race build no homes and have no shelter except what nature affords in clefts and caves.²

When a graveyard is filled and those buried therein are forgotten the land is sold for building lots and the tombstones find their way to soda water factories or lime-kilns.

Dead or living are thrown out of their homes by legal or illegal processes as remorselessly as the cuckoo destroys the eggs of his foster mother or the gambler pockets the wages of the dupe because some other would have done it, or the dupe would have swindled the gambler if he could.

Lady Burdett-Coutts offered to build water reservoirs and works for Palestine, and the Sultan of Turkey stipulated that he should have charge of the money and construction, but as the ordinary politician who controls the building of the Philadelphia City Hall is satisfied with one-half the appropriation the divine porte would be satisfied only with all of it, so the Jews remain without proper drinking water. It appears to depend upon circumstances whether the plunderer is honored or not. A Czar, a Napoleon or a king will have his praises sung for centuries for doing what a Cecil Rhodes, Clive or Warren Hastings were condemned for doing. The nation, however, accepted the spoils, but tabooed the spoilers because they were not royal. History abounds in tales of usurpation, and imposition such as the salt tax and the

² W. D. Gunning, "Open Court," September, 1887.

ruthless grabbing by the powerful whenever a grab is possible, but it is not always conceded that the oppressed would turn oppressor if he could. It is a strange thing, though, that even liberty-enjoying people may sink rapidly to robbing others of liberty. It is well-known that a Yankee wife of a slaveholder in the South United States and a Yankee overseer of slaves were the most cruel of slave drivers, just as renegades try to show their loyalty to their new masters by outdoing them. Occasionally Russian statesmen acknowledge that the grinding poverty of sixty million peasants can no longer be ignored safely. The farmers look in vain to the Czar or to a Prince Oldenburg, but the officials continue to take all the farmers have, to pay royal and church taxes, or to compel them to sell their crops in autumn, at any price, to pay the taxes, which amounts to the same as taking everything. The moujik's only solace is in getting drunk to forget his misery.

The founders of our American government intended to give every family a free home of 160 acres of land through its homestead and pre-emption laws, but where one person has benefited legitimately by complying with the law thousands of instances of evasions have enabled land grabbers to absorb the larger tracts of land.

Conservatism tends to pile up wealth though organization and a settled method of earning and accumulating becomes the accepted and usual one. Interferences with these customary affairs provoke opposition whether the interference is to rob the organization or prevent it from robbing others. Priesthoods with interests vested in maintaining superstition rave with anger if a reformer unsettles things. Capitalists embarked in a commercial undertaking, however ethical or piratical, suppress any opposition whether the opposition is to benefit the public or not at their expense.

The present Greeks have a priest or monk to each 200 of the population and the miracles of the Virgin take the place of all the ancient oracles and other priestcraft.

Queen Olga had the bible translated into modern Greek as the common people do not understand classic Greek, and the professors and students raised a riot of protest against disturbing their "vested interests." As Tom Hood says, the Rae Wilsons would, if possible, make a rotten borough of heaven. The Borgia and de

Medici families arranged to group their tombs about that of Christ, which they tried to have brought to Italy, and thus grab the exclusive right to paradise which this kind of sepulchre would secure them.

Another instance of vested interests preserved occurs in the theological domination of colleges by ecclesiastical professors at high salaries teaching their ignorant but "moral" nonsense, while a scientific professor in the same place is snubbed with a small salary, unless he is a sensational sciolist, when the noise he makes entitles him to nearly as much as the holy men get.

The development of selfishness is seen in higher conceptions of selfishness; desires become broadened and to pander to them regard for others must be had, which in time becomes habit. The new plane of selfishness develops a still higher plane, and under the influence of multitudes of things working at the same time, such as "religion," Mrs. Grundy and expediency ideas, the old original selfishness becomes hidden or altogether repressed and finally "altruism" appears in such steps as endowing institutions of charity and learning, in order to perpetuate the name of the philanthropist.

The utter change of selfishness into generosity suggests the differences between the inorganic and organic compounds, though the latter is made of the former.

A dramatic conception could be framed of the idea that an evil influence defied a higher power to destroy selfishness in a world founded upon it, and by natural processes step by step selfishness was converted into generosity, egoism into altruism. But this is a scientific use of the imagination, not a new theological doctrine.

Repeatedly in the experiences of the world some one person and his family managed to get control of the service of other families by fair or foul means and in time the exactions grew more and more hard to bear. Occasionally a people was sturdy enough to put a limit to these demands, but the rule was that submission grew with arrogance till there was a great gulf between the common people and the "chosen of the Lord." Barons would here and there grow into kings, through aggression and favorable circumstances, and make the lesser barons and their subjects serve them. If this king oppressed both barons and people a little too

much we may have an instance of the barons actually siding with the people and forcing concessions, such as Magna Charta from King John. Little kings reigning over small districts, such as those into which England was divided, struggled against each other in time for over-kingship, or kings over kings. Emperor was a title more generally adopted for that position later. The same struggle went on in Ireland but there was lack of cohesion among the subjects of petty kingdoms there, and instead of over-kings subjugating the under-kings the under-kings multiplied and fought one another, so that while England in this respect was like the many-celled animal governed by a central nervous system, Ireland was still in the fission stage of casting off cells from cells, without forming a central governing ganglion.

It matters nothing what the one in control may be called, whether one of a party, as an oligarchy, a priesthood, a cabal, a Tammany political society, a baron, count, duke or king, emperor or tyrant, the principle remains the same, the mere name tells nothing as to what the people receive in the way of government. A president may have tyrannical aspirations, and one who reigns as dictator or tyrant may be mild and just, but the people attach such importance to mere titles that a change of name calms them, as though painting the leopard changed its nature. Augustus appeased the Romans as a title for rulers, and presidente in South American states covers more brutal tyrannous power than Cæsar could imagine. Sparta was an oligarchy and Athens a democracy and friend of the people, hence to some extent there was class war all over Greece. The nobles were for Sparta and the people for Athens. But history is full of kings grabbing from the people and each other, over-kings putting them down, barons swelling into counts, dukes and lords or kings reducing other kings to underlordship. So long as the upper ruler was recognized as such the under rulers could be imbecile or otherwise impotent figure-heads. When Bismarck was told of the dementia of the kings of Saxony and Bavaria he said it would make them all the safer as kings for his imperial master.

Charles the Second of Spain and his wife were rapacious in the extreme. She vented her spite against Cortez because he reserved for his wife some jewels she coveted. The bloodthirsty

Aztecs were robbed by the cruel Spaniards and the royal pair wanted to grab everything their undergrabber Cortez could bring, to the last trinket Cortez saved for his wife. And these were the Lord's anointed. And again names were no guide to the nature of the robbery. "Benevolences" were a species of extortion by Edward II, Richard II, and Edward IV, wherein direct canvass was made among the subjects for gifts. Under "free will offerings" blackmail extortion was practiced of the meanest sort. Evolution has improved this process by disguising it from the loyal subjects, but were it to cease they would be amazed at how suddenly rich the common people would grow.

After the conquest and pillage of Mexico, Bogota and Peru the Spaniards looked for new fields and started on the quest of "El Dorado." It was in the search for the seven cities of Cibola, said to be paved with gold, that caused Coronado's march northward into what is now Colorado and the Black Hills of the United States, in Dakota, and the disasters that overtook his party. Ponce de Leon wanted to grab eternal youth in his search for the fabulous springs of Florida, very much as the equally childish-minded alchemists sought for the "elixir of life" and the philosopher's stone that could turn all baser metals into gold.

The old Persian Saadi ("The Gulistan") records instances of rapacity being robbed by the rapacious, a caliph robbing a tax collector, a king shamed into justice, cases of extortion, pretexts, subterfuges, and mentions that an orphan's cries shake the Almighty's throne (but the shaking does not seem to help the orphan). The bible speaks of swallowers of widow's houses and the old records point to the ancients having all the animal's propensities up to date.

The celebrated impeachment case of Warren Hastings, 1785 to 1795, was brought to a lame and impotent conclusion through no more money existing to carry on the contest. Hastings grabbed for England from the Rajahs who grabbed from the Hindoos, and England kicked Hastings for having no more to surrender.

The League of Greece was directed to mere plunder, and selfish political aggrandizement was what brought the Romans into Greece. "In the end, B. C. 189, the League was stripped by the

Romans of even its nominal independence and sank into contemptible servitude.³ A people who appeal to a foreign nation to help them usually end in being subjugated by the foreigners. Often has distress appealed for help and found itself in the clutches of money sharks.

Piracy in the days of King William was very common and respectable in New York, and even parsons had interests in the "Red Sea trade" and would not favor attacks upon their sources of revenue.

The daring reformer would be destroyed were he to attempt opposition to established customs such as those of New York merchants who grew rich and happy upon the murder and robbery by their sailors and ships outfitted for pirate business. At present we have advanced to disguising from our families and ourselves any transactions practically piratical but not usually regarded as such.

The history of the Panama canal scandal is recent in which there was royal sanction for wholesale robbery of the French people, and in such intrigue more often the honest opposer of it is crushed by the victims he seeks to benefit.

Knives will desert a cause they see is failing whether it is good or bad, but the best and the worst organizations will attract to it those who are on the watch for place and plunder. So we find bad men sometimes heading a good cause and rascals have managed to worm themselves into high places in church, state and society, posing often as representatives of exalted principles.

Diodorus Siculus says that "though slaves and criminals enriched their masters to an incredible extent by toiling night and day, compelled by the lash to work so incessantly that they died of the hardships in the caverns they had themselves dug and such as by great vigor continued alive were in such misery that death was preferable." The aborigines were forced into the mines by Spaniards in the new world as the Carthaginians traded in human beings to find slaves for their mines in the Iberian peninsula.

The investigation of the coal miners' strike in 1902 in Pennsylvania revealed incredible instances of rapacity on the part of mine owners who practically enslaved working men and children,

³ E. A. Freeman, *History of Feudal Government*, I, ch. 7-9.

and the subsequent endeavor of coal dealers in the large cities to conspire with railways to make a fictitious shortage to control prices was equally characteristic, resulting in the perishing of thousands by cold and the enriching of a few coal barons. Slavery has many disguises. Baer says he owns the mines by "divine right," the same old claim of the grabber.

One of the most apparent filchers of everything, in the way of a society, was the Tammany political order of New York. One of its head rascals, Tweed, held that every man had his price and acted upon that idea. He stole from the people, and his family, enriched by his thievery, deserted him and allowed him to die in the Tombs prison. They inherited his heartlessness.

While pretending to oppose trusts in behalf of the people who were robbed by them, Tammany arranged one of the most cruel affairs of that nature, an ice trust, which would have literally emptied the pennies from the pockets of the poor. The Mazet inquiry in New York City shows that Croker was selling human bodies to the hospitals, but this is merely a feature of boodlism, his blackmailing of big corporations and the police selling protection to saloonkeepers, thieves and prostitutes are also mere incidents of this species of grab game. While I was pathologist of the Chicago Insane Asylum the county commissioners told me that the relatives of the dead patients objected to autopsies, and it took me some time to ascertain that this was a mere invented pretext to enable these commissioners to sell the bodies for \$30 each to medical colleges, and this again is a mere incident in political stealings, for when politicians have charge of public charities and control asylums, poor houses and hospitals, the poor and sick receive about a tenth of what is appropriated and are maltreated besides.

These politicians usually grow gradually bolder in their greed and make their onslaughts upon the people more and more direct, for instance, at one time the New York aldermen tried to build dwellings for themselves in Central Park, and professed that they could not understand why they should not be permitted to do so. An extension of this spirit would have restored the Egyptian corvée and the multitude would have been hauling stones for aldermanic palaces. And these aldermen were of the "plain people"

also, a hint that human nature extends from the king on his throne to the monkey who grabs cocoanuts from his weaker brethren in the trees. Tammany also grew bold enough in 1901 to put chairs in the park for which there was to be pay collected for sitting in them. This innovation led to a mob destruction of the chairs; so the people sometimes recognize and resent imposition, and robbery, but not always. Imposition, by the way, is derived from the French word for tax, and tariff comes from the word *Tarifa*, where pirates exacted tribute from Mediterranean trade. In the one case the word has grown to indicate something reprehensible and in the other case a dreaded name has grown respectable. The high tariff Hohenzollern family is very exalted in Germany.

Spencer mentions the great opposition of the small traders in the outlying towns against good roads being built to London because they would lose trade, not caring for the benefit the people would secure; similarly department stores which sell everything for reduced prices were fought by small storekeepers who could not compete with the low prices, and asked customers to prefer their high prices. The "collective wisdom" of parliament undertook to arouse patriotism to the pitch of being willing to pay higher for English than for foreign goods by ordering the latter to be marked as such, and the "collective wisdom" was surprised to find that the marks attracted purchasers who fancied that goods from abroad were better than the domestic articles. Thus there was misapprehension through grabbing interests not comprehending each other.

Then the people may exert individually their selfish notions to such a display as to attract demagogues who "give the people what they think they want," and this ignorance and mistaken selfishness in all ages have enabled the minority to rule over the majority, whether in monarchy, oligarchy, republic or whatsoever government.

Before the Union Pacific Railroad was built over the American continent a canal across the isthmus would have been considered a great blessing through shortening the distance to California by thousands of miles. When the great grab scheme that resulted in the construction of the railway was successful the railroad interests opposed the canal construction, while the Californians,

knowing it would cheapen freight rates, favored it. But later when China began to open up to traffic, California and the west generally opposed the canal construction, because it might take trade direct from New England to China, so the East Coast interests were aroused to favor the Nicaragua Canal building. Thus short-sighted selfishness is universal in spite of it frequently happening that in the end all are benefited by a great innovation.

Rulers like Nicholas III of Russia, however well intentioned, are surrounded by grabbers who oppose any concessions to the rabble, and there is incessant dinning of bad advice in the ears of all occupants of thrones and presidential chairs. General Grant was surrounded by sycophants who talked imperialism constantly. Americans can recall when there was a talk of "a strong government" by the spoils system element.

A Pennsylvania senator who bought his way against the people's opposition refused to endorse a treaty of peace with Spain until he could use it as a means to blackmail or sandbag some one out of something. Public interests are prostituted when a syndicate induces a school board to change from good text books to very inferior ones because a profit can be made by so doing, and changes in the army and navy uniforms are often made for contract profits to high officials though a hardship upon the salaries of officers affected.

Walter Mapes in A. D. 1200,⁴ the talented writer, described the rotten conditions of court and church. The whole spirit of Henry and his court in their struggle with Becket for supremacy is illustrated in the confession of the imaginary prelate Bishop Goliath. The veil is stripped from the corruption of the mediæval church, its indolence, its thirst for gain, its secret immorality. The whole body of the clergy from pope to hedge priest is painted as busy in the chase for gain; what escapes the bishop is snapped up by the archdeacon, what escapes the archdeacon is nosed and hunted down by the dean, while a host of minor officials prowl hungrily around these greater marauders. Out of the crowd of figures which fills the canvas of the satirist, pluralist vicars, abbots, purple as their wines, monks feeding and chattering together like parrots in the refectory, rises the Philistine bishop, light of

⁴ Green's History of England, p. 150.

purpose, void of conscience, lost in sensuality, drunken, unchaste, the Goliath who sums up the enormities of all."

In grateful contrast with these pictures are the touching descriptions of the village priest in Gerald Griffin's "Collegians." The dear old soul sacrifices all his comfort and time for the humblest of his parishioners, and in the Italian "I Promessi Sposi," the broad-minded, kind-hearted bishop tries to head off the epidemic resulting from almost animal ignorance of the people, who are preyed upon by a malevolent selfish parish priest, who would undo all the good work of his bishop for the profit the priest could secure.

In the time of Charlemagne Benedict of Anaine was a terror to evil-minded monks through his writings. Montesquieu, though born an aristocrat, aimed a reaction against tyranny in general and absolute monarchy in particular. He desired to destroy despotism and elevate the idea of individual freedom. He clung to constitutional monarchy; an optimist by temperament though a democrat by conviction. He originated "citoyen" in place of "subject." He hoped much from Louis XV, but when he saw that today was to be as yesterday and burdens were not to be removed Montesquieu became the mouthpiece of the revolution. In his Parisian letters he touches upon the weakness of France in political, ecclesiastical and social arrangements.

During the civil war in the United States, Austria and France attempted to steal Mexico, but when the war ended Napoleon withdrew his French troops and left Maximilian to get out of Mexico with his Austrians the best he could. The Mexicans captured and shot him. The Monroe doctrine is based upon the necessity of keeping European monarchies from gaining any more control on this continent than they have got already, for with their past histories their greed would surely cause grab after grab until the United States would be on the defensive for existence. It is best to protect the small states from all dangers, even that of their own imbecile management, rather than have them clutched by rapacious foreigners who would soon have their fingers on our throat. The principle in the Monroe doctrine is simply that so long as we can make Europe fear us those countries must be left alone. If Europe could combine to destroy us she would do it.

The London Spectator calls our Monroe doctrine a "dog in the manger policy," that the United States will neither take South America nor allow anybody else to do so.

The fate of Africa is simply that of a continent divided against itself and no one interfering with invaders. After Carthage was destroyed North Africa was ruled over by Rome. The Moslem conquests were from A. D. 640 to 1171. Egypt and the Soudan fell to them in 1250 and 1517. The Portuguese explored the Atlantic coast in 1415. Dutch and English colonization of South Africa followed with the establishment of Sierra Leone and Liberia, and in 1884 to 1891 the partition between European powers of the interior of Africa. Great Britain and Germany quarreled over respective spheres of influence on the Gulf of Guinea, but reached a compromise and France and Germany arrived at an understanding concerning the slave coast and Senegambia.⁵

The balance of power indicates an alliance of European states to keep each other from grabbing weaker states and thus strengthening one at the expense of others. It is an armistice, a mere armed neutrality to be broken up whenever opportunity presents.

When Japan uncovered China's weakness, Russia, England, Germany and France rushed in to secure "spheres of influence," like a lot of children finding that a school bully was really a coward and conclude to empty his pockets. Even Italy came swaggering along for a division. Japan captured the important fortification Port Arthur from the Chinese, and was quietly dispossessed of it by Russia. Japan has been watching the abstraction of Manchuria and control of Corea by Russia, but wisely bides the time when a protest can be effective.

When the Turkish janissaries¹ were killed off by the Sultan Russia promptly demanded a new treaty from Turkey. In 1878 Turkey was prostrate and Russia was preparing to capture Constantinople, but a British fleet was sent through the Dardanelles. In 1894 the Armenian outrages grew offensive, but as no European interest was affected these Christian subjects of Turkey were permitted to perish.

The United States has been no exception to the rule that na-

⁵ A. S. White, *The Development of Africa*, 1892, also J. S. Keltic, *The Partition of Africa*, ch. 12, 33.

tions grab territory when and where they can. Of course there are plenty of reasons, as thick as blackberries, but call it purchase, treaty or what you will, it amounts to the same in the end, and probably our government has been less mean and rapacious and more inclined to give an equivalent than others in history. We settled on New England lands on which Indians roamed, but they could show no deeds for it. We acquired lands from France and Spain which those countries had absorbed from the savages by "divine right" of might. We made numbers of treaties with wild tribes in the west only to break those treaties when it suited us under the pretext that the savages made no proper use of the country ceded to them—the idea of ceding land they already owned! Then we kept them moving farther on till what the Indian trader and the Indian agent and the white man's whiskey and diseases left of them could be gathered into still smaller reservations. Helen Jackson sums up many of the dishonorable dealings of the United States government with some of the Indian tribes, in a book with a preface by Bishop Whipple, who was as earnest as Father De Smet in trying to help the Indian against the white man's swindling. But the matter is treated as though it were unique when it is merely the old world's grabbing way ever since there was anything to grab. The Cherokees still have an old claim against the government, and the last Cherokee will be its heir.

The average American, like the average patriot in any other land, imagines that his country alone should expand until all contiguous territory was taken in. Filibustero Walker in 1855-1860 tried to annex Mexico, and later W. A. C. Ryan, another filibustero, surrendered his life to the Spaniards in an endeavor to walk off with Cuba. Poor Jameson tried to rush South Africa into Great Britain and was scolded for his failure, but his successors finished the work he pioneered. England has good grab and hold-on abilities. Mark Twain said that there is a special verse in the bible that refers to England, it is, "Blessed are the meek, for they shall inherit the earth."

In 1898 the Nile question in Egypt was discussed by England and France and Marchand tried the rush to Fashoda and found that the English had some very compromising correspondence

that had passed between the French commanders and the natives with uncomfortable reference to the English troops. On the final settlement France let England have her way, as usual.

There is a diversity of opinion as to the Philippines. Senator Hoar denies our right to hold them under the Constitution, but that elastic instrument may permit us to annex the world, in time, when we are strong enough. The United States has revoked treaties with China and Indians and Latin American states, but never with a country strong enough to object.

And the grab desire grows with success, but occasionally is rebuked. There was a Norman invasion of the Byzantine empire which, in 1085, failed. Charlemagne was something of a grabber of territory extending from the North Sea to the Mediterranean, but like many another testator he failed to keep the property in the family, though desirous of doing so. When Duke Charles the Bold was slain by the Swiss, in 1477, Louis XI of France eagerly grabbed Burgundy. In the Roman conquest of Italy an agrarian law enacted that no citizen should own more than five hundred acres of land, but this attempt to limit the human grab instinct failed through violations of the law by the rich. Gracchus supported the law but an avaricious senate destroyed him. Similarly the homestead and pre-emption laws of America are subverted by capital, and the best endeavors to benefit the poor are foiled by the persons the law seeks to benefit playing into the hands of the unscrupulous. Absenteeism in Ireland is another item of oppression. The lands being grabbed by nobility, the owners of about half of the land do not live on or near their estates, while a fourth do not live in the country at all, the people regard it as a grievance and think that twenty-five to thirty million dollars paid to these landlords is a tax grievous to be borne,⁶ particularly when no repairs are made and the tenants are regarded as merely profitable cattle.

Chivalrous deeds are nowadays presumed to have a touch of high minded unselfishness about them, the doing good to others without reference to self-interest, but chivalry came from cavalry and the assumption that one on horseback was better than one who walked. Cavalier, caballero, synonymous with gentleman,

⁶ D. B. King, *The Irish Question*, p. 5-11.

implies that the foot man is no gentleman, so honor is grabbed by the one strong enough to own a horse.

Spanish hidalgos grabbed the very vitals of Cuba and the reconcentrado was ending the remnant of the people. Shafter and Sampson grabbed positions that should have been filled by civil service military, instead of by spoils system politicians, because bureaucrats conspired to grab the places for them, but General Miles and Commodores Schley and Dewey ended the Spanish army and navy in spite of Secretary Long, Sampson, Shafter and the Spaniards.

In benighted periods the inventor was liable to the charge of sorcery and was burned alive for daring to do anything for his fellow men, but nowadays he is merely robbed and only killed if disagreeably persistent about asking for royalties. The publisher or manufacturers charge an extra price on books and instruments to cover the author or inventor royalty percentage, but which the author or inventor rarely hears from. So under the lying plea of rewarding study and talent the public is robbed as well as the student and creator of materials sold.

It is a common trick of some manufacturers to induce special ability to confide some secret process to them and then appropriate it without recompense and retaliate with abuse of the inventor if he is at all resentful about being robbed. It is exactly the same kind of cruelty that leads the highwayman to brutally beat a helpless victim.

A chemist named E. B. Stuart has been repeatedly swindled out of the proceeds of his numerous valuable inventions in glucose and other processes, and even out of the processes themselves. Finally he was employed in an official capacity to make chemical and microscopical tests and lost his place because too honest to accept bribes from food adulterators. But Professor Stuart, in considering the intellectual degradation of the average successful politician or dishonest business man, remarked that he was very glad that he was not capable of becoming rich.

The populace have a vague idea that great enterprises advance mechanical and other improvements bearing upon their interests; this is only true to the extent of what the limited intelligence of those in control recognize as furthering their immediate interests.

Seeing ahead very far is too great an effort for them as a rule. So corporations, such as telegraph and telephone, have obtained control of improvements in message conveying, electric light companies in illuminating facilities, coal oil companies in refining and utilizing processes, and some of the inventions are of value, but the idea of benefiting the multitude is a mere accidental outcome of any calculation of the monopoly, a mere incident and never an object, so very often these improvements are shelved and forgotten because the expense of their installation would cut down dividends temporarily, even though both company and public would profit finally by their adoption. Czars, kings and corporations are alike in such matters. Nero only ordered free baths to be constructed because his royal nostrils were offended by the bad smell of his subjects.

Marconi experimented with wireless telegraphy across the Atlantic and was served with an injunction by the transatlantic cable company. Thus organized selfishness tries to stop the world's progress. Business instinct asks if this or that advance may not hurt my vested interests, and if so can it not be suppressed?

A harvester manufacturing company's president offered an inventor \$500 for an improved binding process, but was laughed at, for, said the inventor, "millions of dollars can be made from it." The president replied, "I pay a lawyer \$10,000 a year to fight inventors, and I will use your patent anyway, whether I buy it or not." The vestibule addition to car platforms was openly appropriated by a great car builder and litigation was necessary to secure compensation. A new town was projected by the same capitalist, who advertised that he would pay well for the best process of brick making. When those who responded described their methods the wealthy town builder had a stenographer behind a screen take down the details. He put together all the best ideas confided to him and made his own brick and gave nothing in return for the advice.

William A. Brickell, a fireman of New York, invented and perfected a process whereby the hitching of horses to the fire engine automatically detaches parts, a fire is lighted in the grate and before the engine gets a hundred yards from the house there is a full head of steam on. This has resulted in the prompt saving of

thousands of lives and has kept millions of property from the flames, but Brickell's invention was used without compensation and he died poor after twenty years' legal endeavor to have his patents respected.

A reservoir bursts loose in the mountains and a valley town is swept away, with many persons drowned. The survivors are sent money, clothing and food in reckless abundance. The committee selected or self-appointed to distribute these gifts exhibits personal wealth soon after. After the great Chicago fire of 1871 several million dollars was contributed from all over the world, and some of those to whom the money was sent are now multi-millionaires, when previously they were in moderate and even humble conditions of life. But a hint of this to relations and friends of the wealthy "philanthropists" will produce an angry frown.

Spencer speaks of unexpected results of apparently beneficent movements. Nothing should be simpler than that charities should be organized and beggars referred to the central office for investigation of their claims and worthiness, so all charity funds should be entrusted by the charitable to officers and not to the beggars. The result is a few office-holders thrive on salaries which must be paid, and the salaries increase in amount and numbers with the sums received, and very little is left over for the needy.

Animals and plants constructed of many cells working in harmony for the general good of the colony of cells that form the individual are very much like the social organism constructed of men, women and children. Each cell labors in its own interest, its nature does not permit it to care anything about its neighbor cell, and if anything one cell may do happens to benefit another cell, or part of the body, it is not intended, and so the individuals of a nation while working for themselves alone may under organization assist one another unintentionally, until finally the helping one another, whether as cells or persons, becomes inevitable as a condition of their lives. They would not do it if they could help not doing so, and at least they seek recompense for any extra service to one another over and above the enforced mutuality.

Acquisitiveness is merely the grab desire inherent in every

tissue of an individual, in every molecule and every atom that cannot exist apart, and must associate itself with another atom, either of its own kind or some other kind of elements, so that a single centre in the brain for this faculty is not possible. All desires of whatsoever kind are based upon the grabbing propensities. As desires differ also and develop, one individual wanting social or other distinction, another money, another food in the main, so covetousness must engage many parts of the brain. The good-natured hotel-keeper deficient in grasp is often so imposed upon as to be bankrupted, and those who have roomy mansions are beset with self-invited parasites, and they realize the truth of the verse "Riches multiply those who devour them." Even ordinary visits may become visitations, and a good-sized portion of every community scuttles around in search of cover to be won by flattery, subserviency or harsher means. The hermit crab crawls into any old shell or empty hole, and has been seen in toy pitchers or other cast-off materials affording shelter. A naturalist observed one insinuate himself backwards into a large empty conch shell and suddenly give a start and hurriedly run out to turn around and re-enter, head and claws foremost, backing out with a smaller crab which it contemptuously cast away and then settled down to complacent possession. Many a human parasite has acted much the same when affronted by some sharer of the hovel or palace, cave or tree, and even island or continent, if strong enough to dispute possession.

A physician steadily resisted the business advice to introduce some attractive humbuggery into his sanitarium, such as dosing spring water with salt and advertising its wonderful curative properties. Depending upon skill and learning, and while neglecting business details and devoting himself wholly to intelligent care of patients he could brook no dishonesty in his dealings with them, so the delighted public swindled him by living upon his overcultivated sympathies and failing to pay for board.

About 1877 the Minnesota legislature offered a bounty of one dollar a bushel for grasshoppers because there was a plague of them and famine was threatened through their destruction of crops. A Methodist preacher worked all one Sunday capturing grasshoppers and chased people from his farm with threats to

anyone who would steal his grasshoppers. This can be taken as an instance of the consistency of those who pretend to teach what will result in the spiritual and bodily welfare of others. That minister could prate of helping communities and individuals, but when money was to be made by ridding the country of grasshoppers did not want anyone to steal his grasshoppers.

In England merchants, hotelkeepers and others use the guinea, as it is a shilling more than a pound, and enables extortion from those who confuse the guinea and the pound.

When a child is sent to the grocer or butcher for a purchase the average dealer tries to cheat the little one, gives it what it did not come for or makes false change. When servants take little interest in the welfare of a household tradesmen give short weight and make false entries. Tea, coffee, sugar, coal, etc., afford the most convenient materials for swindling by means of overcharging and underweighing; frequently goods never delivered are charged and paid for. When dealers make Christmas presents to servants the master of the house is the one who has paid for them without knowing it. Bearing on habit and instinct the grabbing propensity may be so ingrained that there are actually persons who would prefer to make a dollar dishonestly than ten dollars honestly. This is the gambler's instinct and a form of love of excitement. Board of trade dealers, bucket shop and clock game men, stock jobbers, and the multitude of speculators, many of whom are refined, gentlemanly cut-throats, are of this class.

Wheat pits, railroad and steamship companies, and other vast corporations fight tooth and nail for personal gain and yet serve unconsciously the mighty world purpose of feeding London and other great cities, or large areas of population elsewhere, from the surplus of western fields of grain. Intestinal cells may similarly try to eat up everything, but the bulk of material goes elsewhere in the body for consumption.

People who are quite honest ordinarily, and in their commercial dealings as "honesty" goes, may not hesitate at a literary theft, at keeping a friend's book forever or permanently borrowing an umbrella. One may also be quite punctiliously honest in little things, but steal a railroad deliberately and designedly.

On the first of an April day an elevator man of a large office

building put a pocketbook on the floor of his cage and during the day twenty who noticed the book tried to secretly take it, while only four others called his attention to it, the others had not seen it, and these crowds represent a large class who lose opportunities for gain, however disposed to be honest or dishonest.

A fashionable money-making practitioner told me that he would rather have a patient die on his hands than to call in a consultant who might save the patient's life. That is the business instinct occasionally in medical practice. Business enterprise in professional matters sometimes goes to greater lengths. A quack who was a president of a "school of osteopathy," a humbug travesty of massage, claimed that he bought dead bodies from the attendants of an insane asylum for \$30 each, and he was told that he could pick out his subjects "on the hoof" from demented in the "killer ward." Now this sounds preposterous, but "hold up" men will murder for a dollar, and these identical thugs have often been given attendants' places in asylums. If willing to murder for one dollar would they hesitate for thirty?

An estimate of the costs of births in large cities was placed at \$23, marriages \$76.50 and deaths \$170. The cause of this is that happiness is taken advantage of as being likely to be generous, just as the cabman wants to overcharge for wedding trips, but when grief causes indifference to expense a better chance for charging is secured.

Graveyards are incorporated "forever," and when the dead are forgotten the graveyard is cut up into building lots and sold. One or two wealthy tomb-holders maintained their rights, through the supreme court of appeals, to their property in the cemetery which afterwards became Lincoln Park in Chicago, but all other graves were destroyed. Often money is taken by sextons to keep graves in repair, and lies are told when their neglect is discovered.

The extremely wealthy may combine in a trust to rob the poor and end by robbing each other, though many trusts accidentally and unintentionally benefit the people as a result of but not as an intention of the combination.

When yellow fever came to Louisiana commercialism tried to hide its nature by giving it false names, as Bayou fever, malaria,

etc. In 1630 the same thing was done in Lombardy. In New Orleans Dr. Holt was denounced by press and pulpits for his efforts to suppress the epidemic owing to the interference with profits of the merchants. In 1884 I appealed to Chicago merchants to assist in preventing political abuses and robbery of the insane at the county asylum, and discovered that merchants sold inferior goods at high prices to the commissioners and divided the profits of starvation and other neglect and brutality of the helpless inmates.

The Illinois Central Railroad was permitted to occupy ten miles of the lake front in Chicago with tracks. In fifty years the extensions of the company towards the city and by making new ground from the lake would approximate in value five hundred million dollars in value, and it required the incessant opposition of a committee of property owners and the instruction of twenty years or more of editorial comments, with occasional injunctions, to limit this gigantic grab to its final dimensions. A piece of land also adjoining the lake front was given to the state by the general government and the rats, ferrets and snakes of common councils, art societies, legislatures, confidence combinations did all they could to get this property from the people by all kinds of pretexts, and the tricksters are gradually succeeding.

A street called Dix, adjoining the Chicago and Northwestern depot, gradually became more and more slender between rows added to rows of railway tracks until the street vanished from the surface of the earth, as hundreds of other streets in Chicago and thousands elsewhere where rich corporations such as railways needed them, have gone.

The trail of a grabber may lead into several directions. What was known as the "forty thieves' legislature" of Wisconsin had an agent, a clerk of the house of representatives, who was intrusted with forty thousand dollars to be divided among the "solons" to enable a corporation measure to be passed, the clerk divided five thousand and kept thirty-five thousand, moving to Dakota he corrupted the United States Survey Service and suggested a gas company to be formed by a lot of small stockholders who were to be gradually frozen out; that is, they were to be so discouraged by fraudulent management that they would sell

their stock for trifling sums. A similar stock company was formed in a great city which grew rapidly with the relatively small capital of \$100,000. In twenty years the stock and property valuation of the gas plant was eighty million dollars, made by swindling the public in many ways, and the ownership by this freezing out process centered among a few with criminal instincts, one of whom spends his time with gamblers and lewd company. He knows no more satisfactory means of recreation. By false meters and registering of the gas consumed the ordinary tenant is robbed annually of from \$25 to \$200 or more, and in a city with a hundred thousand consumers the aggregate would make baronial feudal tribute small indeed. And practically this unjust monthly assessment is slavery, feudalism, brigandage or whatsoever the politer equivalent for picking pockets may be.

The reigning Tartar grabbers of Manchuria pocketed China in ancient days⁸, but the modern empress dowager grabbed the throne because the young emperor was too progressive and really wanted his people to be better off; this desire of the emperor to help the people was shocking to the grabbing courtiers, who laugh at the idea of benefiting any one but yourself. The emperor wanted to stop opium eating and divert the incomes of the temples to schools. He further wanted to liberate Korea. In 1898 he prohibited the appointment of bigoted conservatives who adhere to obsolete and unpractical customs, and instituted scientific studies in civil service reform examinations. Sweeping general reforms were commanded. Dismissed officials appealed to the ignorant conservative old dowager empress, who disposed of the radical and took the government upon herself. In 1895 missionaries were murdered by Chinese at Hua Sang, and in 1897 reparation was demanded by Germany for missionaries who were murdered in that year, so to pacify the Kaiser part of Kiaochau was "leased" for 99 years to Germany.

Then foreign demands increased by 1898 and concession grabbing increased to satisfy the British, French, Russian, German and Belgian governments, who took advantage of the whipping Japan had just given to China. In 1901 the "Boxer" opposition to the foreigners broke out, and under a pretext of a revolution the empress directed the legations to be destroyed, but by August

Pekin was captured by the allies, who, with the exception of American, British and Japanese troops, were quite brutal to their captives. There was great international jealousy and looting, and finally the terms of conquests were arranged and a large indemnity demanded to cover the expenses of the war. Thus poor old China thought it owned heaven and earth, and its ignorant rulers grabbed all the rights away from its subjects and foreign grabbers completed the game. So China will learn and will progress through compulsion. The nations want China to buy cannons and ammunition, and thus the world is forced to move whether it wants to do so or not, because the grab differentiation commands the conservatives to die or move on, and thus selfishness is a factor in progress, and the main one.

The nations demanded indemnities so large they were beyond possibility of payment. Even Italy came in with an extravagant claim. But when it comes to looting, officials can be very impartial between taking from foreigners or from their own countrymen. The great surplus occasioned by the war tax collections that were unused in the United States Treasury in 1902 tempted the congressmen to return the fund to the people in such a way as would best conduce to their re-election to congress, by giving public improvements where they would "do the most good" to politicians.

Gutenberg and Coster were driven through Germany as sorcerers and wrenched the art of printing from poverty and misery. Palissy, the pauper potter, burned his last stick of furniture to finish his secret of enameling. The stocking knitter was invented by poverty-stricken Lee. James Gordon worked many years to invent his grain reaper amidst opposition, sneers, slander, privation and anxiety, and finally a rich company appropriated it, but his long fight ended in a decision in his favor. The original inventor of lacing-hooks on shoes confided in a friend who at once secured patents and wealth, and the real inventor got nothing. The inventor of interlocking horns with balls at the ends for snapping closed pocketbooks and gloves received a kidney stew dinner and fifty cents from the man who made a handsome fortune out of the profits. A patent on a bottle-stopper was bought for a thousand dollars and subsequently independently of any

agreement thirty thousand was voluntarily given to the inventor by the purchaser who made five million dollars from the invention. Were inventors always treated as fairly as this there could be little complaint, but this act of generosity is exceptional in such cases.

Patenting an invention is no assurance of protection in all cases; inventors of small articles know their ideas will be stolen anyway, and so they rush out as many articles as possible to fill the market before infringing imitators acquire the bulk of the trade. Some big "inventor's" agents examine caveats and new patents to enable them to appropriate all new ideas possible without recompense.

The Panama canal scheme resulted in the French stockholders being robbed of all they had invested. Great lies were spread as to the fortunes to be made by investors, and the company luxuriated in a drunken frenzy of wealth on both sides of the Atlantic; the management was so corrupt and careless that machinery and stores of the corporation were allowed to be lost and destroyed without efforts being made to save them. Locomotives worth five thousand dollars would fall off the tracks, and instead of being replaced would be buried under hills of dirt. Every conceivable rascality was practiced in the pretense of this canal construction and finally the end came with much hysterics and attempts at revenge. Poor de Lesseps, who had successfully engineered the Suez canal, was engaged in the new affair merely as a figure-head by the schemers, who took advantage of his senility to impose upon him and the public they robbed, and it is surmised that the French owners of the ruins of the Panama canal have made great efforts to interest the United States Congress by means similar to those used in Pacific Mail days.

O. W. Holmes, in his "Autocrat," remarks:

"When publishers no longer steal,
And pay for what they stole before,

* * * * *

And when you see that blessed day
Then order your ascension robe."

Bovee suggests that "there is probably no hell for authors in

the next world, as they suffer so much from critics and publishers in this."

In the preface to the famous "Collegians" it is told of Griffin that he was robbed and abused by publishers and editors, and both he and Payne, the author of "Home, Sweet Home," were swindled by theatrical managers.

Max Müller pursued his studies for many years unknown and unappreciated, and when his Rig Veda edition was about to appear rich toadies wanted to share honors with him and pirates tried to steal from him.

The usual arrangement between publisher and author is a very silly one; worse than that, in view of human nature it is an imbecile one. The publisher keeps all accounts and the author has to depend upon the "honesty" of the publisher who is tempted to the furthest limit, as he may keep two sets of books to cheat authors who force him into court or he may risk the authors' ever trying to gain an accounting by law, depending upon their poverty and ability to be bluffed.

An old civil engineer who had written a cyclopedia sold some of his books, and his publisher put him in jail for the theft of the books, as the author claimed the amount appropriated was due him on royalties unpaid. Another author deposited six hundred dollars with the same publisher for expenses in printing a mathematical work. In thirty years the author barely recovered back his guaranty in royalties, while the publisher acknowledged to \$3,000 profit, and how much more had really been collected will never be known except to the publisher.

In this case the author paid all the expenses and got nothing but glory, and the publisher got all the profit.

An author may have devoted his life to advocate certain principles and made use of his literary abilities as a mere means of presenting these principles. The commercial spirit of the publisher sometimes studies the manuscript with a sole regard to getting money through its means, and ruthlessly expurgates and amends until the principle is mutilated beyond recognition, and the sage appears in "cap and bells," for the publisher realizes that "while the world admires the philosopher it will throw its pennies in the monkey's cap."

Thackeray's "Yellow Plush Papers" were revised by the editor of the Edinburgh Review beyond recognition in parts and Carlyle had to submit to Francis Jeffrey's dashing out and cutting out and writings in, and finally got to refusing Carlyle's writings altogether as not good enough for the Review. Dr. Billings of Sharon, Mass., paid a publisher of a semi-religious periodical to bring out a book. The publisher accepted the money, printed the book, and from religious motives did all he could to kill its sales. His religion admitted of defrauding an author under false pretenses.

Some publishers combined to have a bill passed in the New York legislature requiring the use of larger types in printing books, and testimony was taken to show the effects of smaller type upon the eye. This pretext of consideration for the public was in the interests of publishers who wanted to prevent cheap editions of fine print popular books. Thus the people would be forced to pay higher prices under the trickery of regard for their eyesight preservation.

A Philadelphia medical book publisher has been not only thievish with his authors, but also with his book agents, sometimes giving them nothing for a year's canvassing. His stock in trade includes going into legal bankruptcy and bluffing all his victims with threats. He is extremely polite until his knavery is discovered, and then he adopts the usual animal tactics. When the fox is cornered he shows his teeth.

A favorite method of robbing authors incidentally robs brother publishers, a work that has become popular is stolen outright from a foreign publisher and author and reproduced without compensation to the real or ostensible owners. The method of reprinting English works in Germany for a small cost and selling them in English-speaking countries has been successful in spite of copyright laws which afford little protection at best.

Faust and Gutenberg are often spoken of as the inventors of movable types. The facts are Faust was a money-lender and let Gutenberg have money to carry on his experiments, and in 1455 Faust foreclosed on all Gutenberg possessed just as the first work was being turned out from the presses. Gutenberg had been intent upon the invention while Faust looked out wholly for

his personal interests, unscrupulous as to whom he wrecked or how his money was obtained. Years of labor can be converted remorselessly by commercial bandits, many of whom are high in the world's esteem and enjoy wealth from plunder of the poor and honest, who in some cases were driven to paupers' graves.

Goodyear, the vulcanizer of India rubber, had much litigation to establish his rights, though it is not the rule for inventors to succeed financially. It is rare to find business ability with inventive genius. The single hearted worker in any field is too much absorbed to be able to realize the gathering of parasites and predatory animals watching him for the first signs of success on his part. Metaphorical fangs, claws, beaks, descend upon what he has uncovered, and he is lucky if even his reputation is left.

Professional men are notoriously poor business men, and no one knows this so well as the business sharper who takes advantage of it. The cause is simple, no one can develop in several directions at once. The money shark is a specialist. The physician too often is so deep in his studies, so wholly wrapped up in the welfare of his patients, that with returning health they find the doctor pays little attention to his recompense, and so they naturally try to forget it themselves, and often succeed. It requires a high type of intellect to appreciate a physician's services.

To prevent a famous cathedral from being reproduced by its inventor his eyes were put out, in times when such cruelties were more common, but this desire to prevent what is secured from becoming so common that too many enjoy it is seen today in exclusive books at great expense being sold to the few, and the plates being destroyed to prevent other copies from being printed. Grand churches and other "public" buildings are empty six days in the week, while the poor are without shelter.

Scullions of the wealthy destroy and throw away enough to feed all the famished in the city, indications of the animal selfishness and carelessness of even intelligent people, and of course with reverse positions the poor made rich would do the same with the rich who were made poor. It is simply inherited common animal human nature. What we grab is our own, no matter how we get it, or who needs it more than we do.

There is a disposition of the successful "to pull the ladder

up" by which they have climbed. Professors and merchants, military and navy alike have this feeling. The monkey in the coconut tree growls at intruders.

The real conflict of capitalists is not against the poor directly, but between themselves, and F. S. Billings holds that the "dog-eat-dog" combat between them is as fierce as it is between the wage-earners for bread. Mere differentiations of the game of grab.

It is fortunate for the poor that the rich do grab from each other, for otherwise the common people would be hungry and naked always. In the evolution of the grab instinct the combinations for trade purposes seek profit to themselves. It is folly to suppose they organize to help their fellow-beings. The robber monstrosity, the Standard Oil trust for example, is not philanthropic, but many of these combinations finally accidentally cheapen products against their will; they would raise the price of everything handled if possible, but fear of competition among other things compels them to lower prices, except when they temporarily squeeze the public when they dare to do so by raising prices, which they cannot keep up, as competitors would instantly rush in. Murder and arson are favorite weapons of some of these giant corporations. The methods of the beast and the savage are used by aggregations of beasts and savages. The grab propensity is not hidden through robbers banding themselves together. When these giant combines fight one another then civilization and the common people get the benefit of the contest.

CHAPTER XI.

DEVELOPMENT OF THE MIND.

The new-born child has an undeveloped brain just as many other parts of its body are not developed; its organs of sense for sight, hearing, touch, taste and smell are imperfect and not well attached to the brain, and the bundles of telegraph lines that connect the different regions of the brain in the grown person are altogether wanting in the immature child. Some of these bundles that are the most important by way of inheritance from the races and the animals that have preceded us begin to appear in the brain and spinal cord four months before birth. But in the upper and middle part of the brain these white bundles are not formed until the child is ready to be born, the nerves in the brain that pass between the upper part of the spinal cord, the centre for vision, and the centre for leg movements being the first to appear; the nerve bundles that pass down the spinal cord to enable the brain to properly regulate the movements of the body and limbs do not appear until after birth; the great mass of connecting bundles between the spinal cord and brain begin to develop at birth and continue to the third month. The front part of the brain and the lower portions of the middle part of the brain do not begin to develop until the fifth month, and then they continue to grow to the ninth month. This includes provision for eyesight to be connected with leg motions, and then the gradual development of other tracts for the head, arms and other parts, and then the highest intellectual part of the brain behind the forehead, being the last to develop, is in keeping with the evolutionary history of man backward to his earliest animal ancestry.

Now the ability of the new-born child to grasp a stick and support his own weight by holding on to it with his hands, points to the early construction of the nerves that pass between the hands and the spinal cord centres, much lower than the brain, and this

indicates the tree life of our ancestry, and the use of the hands thus early in clinging to the mother and in passing from one bough to the other. The feet also have some grasping ability and are turned inward as are those of monkeys, and where ankles remain weak and the child walks on the outer side of his foot it is because the later developed muscles to that part have failed to grow properly. And just so when different parts of the brain stop growing in keeping with the age of the individual then the child may become idiotic.

The helplessness of the infant has its analogy in the low grade intelligence of early animal existence, but instincts begin in many mammals at birth, and the moment the bird is hatched automatic reflex acts are performed through such instincts, which are the accumulated results of more than a million years of ancestral learning. Little chickens just out of the shell follow the flight of insects and peck at food. The baby cannot hold his head up or guide his leg and arm motions. At first he cannot see any better than the youngest puppy, and in many other respects he is less mature than the generality of new-born animals, not wholly because the higher the animal the longer and more helpless is his infancy, but the vastly more complex anatomy of the superior animal requires more time and a greater range of material to perfect its organs, to perform the functions inherited from a longer line of ancestry, who have undergone greater changes in their brain development than have the lower kinds of life. Appropriate parts are needed to perform instinctive acts, and we must wait till the brain parts mature in the infant, as feathers have to grow on the bird's wing before it can fly. A very low instinctive reflex is the grasp of the nipple by the new-born, but even this can not be done if the child is born too soon. The earliest movements are kicks before birth, and later cries, sneezing, grimaces, contortions, sucking, and immoderate, irregular motions. Restlessness continues throughout childhood, and involuntary squirming occurs when the child is curbed as during lesson learning, because as yet the energies are too general to be directed mainly in a few channels, and nerve tracts are too incomplete to allow definite well-regulated movements at this period. The irregularity of the idiot motions is explained by failure to develop the final complex

brain connections that distribute impulses intelligently. When a chicken has its head cut off it flops about convulsively in the absence of its higher regulative apparatus, the brain. When movements become more intelligent, better adapted to definite purposes, then they are said to be co-ordinated, and this co-ordination, or improvement in the way the child handles himself, keeps pace with the growth of the finer connections, the telegraph lines in the brain. The motions then tell what is taking place in the child. The poorly regulated movements are observed also in the child's first efforts to write when he keeps his tongue, feet, face and hands going. Adults learning to write do the same, as their writing centres in the brain are not well connected with motions.

Sneezing at birth is attributed to the cold air contact with the skin and sensitive nostrils; it is a reflex instinctive expulsion of substances from the breathing passages. A tickle induces reflex attempts to escape. Darwin noted a seventh day infant bent his toes and drew away his foot when the sole was touched, the palm closed when touched and opened when the back of the hand was touched. Months pass before the child regulates his hand movements, showing that experience was the gradual teacher of his ancestry. Before five months he holds his mother's breast.¹ Though grasping can be done in a reflex way without intention² it was the seventh month before efforts were made to grasp an object with the hand.

Desire and attention were expressed a few days later by his extending his arms, protruding his lips and looking earnestly at his father. In a few weeks what was purely mechanical becomes voluntary. As Compayré notes, the history of all the child's motions are the same irresistible, blind impulses at first, gradually conscious desires, thoughtless but with an end to be attained, he comes to direct his motions, though ignorant of how they are carried on, and for that matter seldom does he ever know or care, however old.

Children do not follow objects with their eyes at first; they

¹ The Intellectual and Moral Development of the Child, Gabriel Compayré, tr. by Mary E. Wilson, 1896.

² Preyer, The Senses and the Will, p. 241.

later learn to direct their looks and fix them upon objects and appreciate distances. The light pains the child's eyes, though nearly blind. The field and range of the vision of the new-born is limited and short. He does not see to the right or left, but only in a straight line, and not very far away. He cannot move his head or eyeballs rapidly, and correct vision depends upon ability to oscillate the eye. The angular sensitiveness of the retina and visual tracts is not what it becomes later. At a short distance in front of him he sees the candle light held before him, but farther away he loses it. Every new-born child is short-sighted, myopic, and his ability to see farther away increases with the months passing. A child of two months can see a foot and a half off, one of three months a yard. For a few weeks the eyelid motions are neither co-ordinate nor symmetrical, one eye opens while the other is shut, and the eyelids do not accompany the pupil regularly in their movements, and co-ordination of the eyelids with eyeball movements does not exist at first. Dodging, squinting, from what Preyer calls the aggressive hand, does not exist during the first weeks. The eye motions are not united up to the third month. Espinas mentions a child who followed the light of a lamp with his eyes on the twenty-sixth day, and at two months directed his glance better and better, and even fixes them upon the eyes of the person speaking to him, instinctively, reflexly and not by will power. Darwin's son had not acquired the faculty of following an object with his eyes when rapidly waved before him till seven and a half months. At the twenty-ninth month Preyer saw a child follow the flight of a bird with his eyes, and I think this record is a misprint for twenty-ninth week.

One born blind whose sight is given him by an operation said he saw an extended bright field where everything was dim, confused and in motion, so likely it is with the first sight of the infant. Even at two or three months the child does not distinguish one object from another, a few bright points as lights, the reflection from the eyes of persons or animals, bright playthings, etc., are seen, and then gradually new images appear. In the second and third month he seems to see new things, though they were there previously.

The infant's color appreciation is "raw," for he is not sensible

of shades of color. At four months a boy began to prefer bright red to other colors. Red is the first ray visible in the spectrum and the preference of savages and barbarians.

The short-sightedness of the infant is allied to the indifference of animals to objects in the extreme distance. The inability to fix the attention is what is found in most dogs and monkeys.

After the color sense has come to the child then the ability to recognize forms develops. He greets his mother with smiles as he associates her with a past full of dinners, but the stranger astonishes and frightens him. Preyer says his son at two years recognized the photographs of familiar people, but long before this he knows persons apart, the face, form, stature have impressed the child. At four months Darwin found this ability to recognize. Tiedeman's son at the fifth month turned away from black clothes, at eight months this child was affectionate to those he knew. Cuignet's child recognized his mother and smiled at her, but not at others. There is a decided disposition of the infant at first to fear strangers and many new things, often capriciously, and later things and persons he once feared serve to amuse him.

Binet found an appreciation of small differences of distances by comparison in a girl of two and a half years.

Attention, curiosity, sympathy, astonishment, intellectual and moral instincts depend largely for their existence upon sight registrations in the brain.

Preyer describes the child groping, stretching out his hands to seize objects far out of his reach, at twenty months one wished to jump from a window to his father in the garden. This inability to judge distances is shown by the blind when given sight, feeling as though all objects touched their eyes. Nor can they tell cubes and spheres from squares and discs, the human face looks like a plane, though they knew how it felt. One previously blind girl tried to grasp an object thirty yards away.

Taine speaks of a little girl at the third month who began to associate color with touch and muscular impressions of distance and form. It is not at the outset that the touch perceptions begin to join the sight perceptions. Twenty days after an operation the sight impressions were not yet related to touch. One picked up a cat to be able to tell it from a dog and said: "Well, pussy,

henceforth I shall know you." The child learns that the tree appears larger as he nears it and the house looks smaller as he leaves it, but he learns these matters long before he can walk.

A few hours or days he is temporarily deaf, from the absence of air in the ear-drum of the new-born child. The first impressions of sounds to an infant are startling and react more violently than sight. A loud sneeze heard for the first time makes the baby act like a jumping-jack. Persons who have had ear wax obstructions to hearing removed suffer from the new loudness of all sounds. But as with strange sights that at first alarmed so it is with sounds when they become familiar; as Darwin says, they finally seem to be accepted as good jokes. When a month and a few days old Tiedeman's son delighted in piano music. In the sixth week he opened his eyes wide when sung to; in the eighth week he was attentive to music and laughed and smiled; the thirteenth week he was quieted when he heard notes, but he liked noise because it was noise, and as with savages there was no question of taste, but if amused by all noises he was charmed by music, for it suggested order, regularity and beauty, which were to him mere exercise of nerve channels, for the time being diverting his kicks, sprawls and coos. Cuignet's child at one month recognized the mother's voice when it could not tell people apart. At first it is the pitch of sound that is appreciated, while later it is the tone and articulation.

After the touch sense, taste is the next earliest faculty to develop; the child rejects sour milk. Preyer's son shook his head and closed his eyes when a new dish was offered him, his face expressed astonishment, and yet the food was pleasing to him, for he asked for it later. The sight of some dishes is repulsive to some children, nor is it easy to always be able to tell why this is so. Heredity and habit are potent in tastes.

The new-born is indifferent to odors. Smell appears illy developed from the very start of life, but it plays a part in preference of food or nurses. At the fifteenth month cologne pleased Preyer's son, and not before. Some children develop a most extraordinary olfactory discrimination, being able to recognize persons apart by their individual odor. As the smelling sense was an earlier means of searching for food and telling of an enemy's

approach it would seem that this delay in its development is anomalous, but nature often abridges the tendency of structures to abort, and as the smelling organs have grown less important in man than his vision the facilities for sight are mainly attended to. There are, however, large bundles called the hippocampus major and fornix fibres in the brain which, in my opinion, formerly related the eating with the smelling centers of the brain, but as the olfactory lobe at the brain base degenerated into a mere tract, with embryonal elements for the most part, the nose became poorly connected with the olden nerve paths in the brain, and these latter have a tendency to diminish, especially at the part called the pes hippocampi, and the hippocampus minor could be regarded as relating the eye registrations in the cuneus with the former paths which were connected with the smelling sense. The large size of the old paths, as compared with the smaller size of the new, the major with the minor, could be regarded as due to the millions of years in which smell guided the eating motions in our animal progenitors, while the acquisition of eyesight discrimination in such matters is comparatively recent, only a few hundred thousand years for instance. So the major bundles remain the larger as yet in spite of their tendency to disappear, and often a change in the uses of a part suffices to retain it when the former use has ceased.

Disagreeable touch impressions, as too tight bandaging, or sprinkling in baptism, are resented. The child appears to alternate pain and pleasure, but at first pain is most evident by its incessant cries. Preyer says that it is altogether wrong to maintain that a child has no fear unless it has been taught him. It is native and associated with all new impressions, as wild animals are startled by the unknown. A simple change in costume may arouse fear in a young child, as when a mother put on a large hat her baby was greatly frightened.

It bears upon the evolution of emotions that anger is a feeling that often replaces fear in a child; at first indefinite tracts diffused the feeling of surprise in tremblings and badly regulated motions to escape, but with the advent of a better organized, more definite nervous system effort to resent the unpleasant experience would be suggested, and the instant the unknown becomes famil-

iar there has been a change for the better, an evolutionary step, in the nervous system. A child of four and a half went into a rage over an unknown tongue his father spoke to him, the odious sounds at first scared and later annoyed him. Compayré holds that astonishment in a child is at first synonymous with fear and later with admiration. Surprise and fright are one and the same to him. At four months Darwin's son regarded all loud sounds as good jokes, but an unfamiliar snore frightened him. So it is not in all instances that when familiar with matters the infant changes to rage or admiration; it depends upon associated impressions, a laugh at baby's surprise could be recalled when he once more heard the noise that startled him at first, and his imitative disposition causes him to laugh when the noise is repeated, as he has learned its harmlessness, but things disagreeable remain so from the first. Darkness frightens children and sometimes animals. Imagination fills the night with terrors. There seems to be a natural repugnance for black in children, and solitude is usually terrible to the child. There is much explained by heredity in real dangers experienced, and the persistence of barbarous superstitions. Children, horses and some other animals show fear over movements without apparent cause, as when a newspaper or an umbrella is blown about. The skittish horse has a suspicious *qui vive* fear of danger at every turn, and his later amusement when familiar with what at first frightened him is shown by his play pretense of being scared. This fear of the unknown that causes the horse to shy at a wheelbarrow operates to drive the superstitious into the temple.

Fearlessness is often spoken of as an infantile trait, but this is merely because danger is not recognized and there is no foresight. He does not wince on being menaced unless he has been struck; he knows only caresses, but he has tears for imaginary troubles.

The effect of mental impressions in changing the chemical properties of the blood and devoured secretions is shown in the instance of anger converting a mother's milk into poison for its offspring, causing convulsions. The gluttony of the infant inducing everything to be stuck in its mouth is a consequence of all its nervous system being built upon ingestive desires. When the

higher brain qualities are lost, as in the dement, these same glutinous indications appear again. Affection in a child has its origin in the selfish recollection of personal pleasure given by the nurse or mother. A toy, a dog, or cat, has perhaps the same rank in affection as father and mother (*Compayré*). He also loves because he is loved. "It is by dint of receiving that the heart ends in giving."³

At six months Darwin's son was sad when his nurse pretended to cry, but not till a year old did he express love actively, as when his nurse returned, by embracing her.

The laugh of a child is associated with appeased hunger or the expectation of that pleasure. See it chuckle impatiently in anticipation, and laugh and smile at the breast, and the broad grin of satisfaction when gorged. It is the glorified smile of sanctity in its original state. The saint and baby has a belly full of protection against want.

At six weeks the laugh appears and the smile is a symbol of laughter inherited from the associated habit of enlarging the mouth to eat large morsels of food.

Darwin notes that tears appear at the third or fourth month, but Preyer says at the twenty-third day. The "crocodile tears" appear directly useful in lubricating the eyes pained by sun glare and can be regarded as a substitute for the direct salt water bathing of the eyes by fishes. So by serviceable associated habit tears have come to express mental grief which at first were shed to ease physical pain of the eyeball dryness, and step by step extended to other physical pains, and finally to all kinds of pain whatever.

The first suffering is physical in the infant, and later come the emotions of fear, anger, surprise, chagrin, and finally moral grief. In man tears often are suppressed in physical pain and appear only as an expression of moral grief. There are also emotional tears of joy, contentment, satisfaction, showing that the lachrymal gland must be surcharged by a rush of blood to its vicinity by associated action of all emotional influences.

Anger turns the baby's face red and fright may pale it, but there is variability in blushing. Some adults either pale or blush

³ Guyau, *Education et hérédité*, p. 63.

under emotional influence. Blushes are seldom precocious, and thus special vaso-motor action appears with the later mental development.

The child expresses with his physiognomy, humility or courage, weakness or strength, surprise, astonishment, admiration and the pout of bad humor, and numerous evidences of pleasure or pain.

"Memory does not appear until the third year, according to some."⁴ Others say the fourth or fifth year, but Emile Rousseau⁵ says: "Although memory and reasoning are two essentially different faculties still one does not really develop without the other. Before the age of reason the child does not develop ideas, but images."

"The memory of ideas, the adult memory, which is capable of following and recognizing all the threads of a long reasoning, is absent in the young child, but children remember sounds, forms, sensations, everything they perceive and feel, abstract ideas not being yet within their reach."

The adult does not remember the first years of his life, but certainly the infant has memory, only it develops into a different sort from that of the adult, who remembers his memories back to certain periods, and beyond that, except on extraordinary occasions, fails to do so. At times very startling impressions may be recalled from an earlier date than five, four or even three years of age." Earlier recollections depend on precocity, the character of the incidents witnessed, their novelty or importance, a catastrophe, misfortune, fall, while ordinary events of monotonous life will be forgotten" (Compayré). Consciousness ceases to be concerned in fully adjusted monotonous matters, routine events of infancy, though they leave their impress upon the brain. Exceptional incidents of shock or blood supply changes may return forgotten events to consciousness, however.

Every new word the child learns is an act of memory. A seventeen months' child recalled its nurse's face after her absence of six days (Preyer), but at seven months he did not know her

⁴ Madame Campan, *De L'Education*, Lib. II, Ch. I.

⁵ Book II.

after four weeks' absence. Perez cites a child a year old recalling a servant after a month's absence.

So the child does have memory from its birth, but this memory is fragile and easily obliterated. Continued repetition of impressions is necessary to fix events in the mind, and even these in infancy may sink into association with automatic performances and fade from consciousness largely.

A child mentioned by Liebnitz, who became blind at three years, retained no sight recollection. Preyer tells of a little girl who, at seven years, lost her eyesight and regained it at seventeen years of age, but had to learn anew how to name colors, distances and dimensions.

The child hears his mother's tongue constantly, the same words repeated, and he recognizes objects and persons because he sees them every day, and when children are often reminded of them they fancy that they remember earlier events when in reality it is only the mention of these earlier events that they recall. The child confuses past and present; an hour and a week ago are about the same to him.

By a return to the original scenes of childhood after many years events may be vividly recalled that were not known to be in the memory at all. Old dormant impressions are revived. A child of four years fractured his skull, says Abercrombie, and did not recall it till fifteen, when he had a delirious fever, and then spoke of all the details of the operation on his skull.

Compayré and other psychologists speak of hereditary memory as an instinct determined by ancestral experiences. Eggar says: "Memory is produced at the earliest age for acts that are frequently repeated; it is slower in the case of accidental acts. At fifteen months a child goes to a toy accidentally fallen under a chair; before this he could not have done so. At six months a child burns his hand on a hot plate and afterwards avoids the plates. In lactation, play and in walking memory is evident. Memory has been represented as a form of habit and instinct may be defined as a hereditary memory, an impersonal habit. "If words are necessary to ideas they are to the remembrance of particular perception, and to cause them to remain."⁶ The uncertain

⁶ Compayré, p. 227.

state of the memory during the first month is laid to the absence of language, but the brain structure itself is more at fault. Before two years the baby has precise remembrance of familiar toys, whippings, candy, falls, a kitten, caresses, kisses, etc.⁷ "The child's mind is like a sponge, always thirsty."⁸ One has more power of attention at fifteen than at ten, more at ten than at five, and so age improves one of the conditions of remembrance. The child's attention is short, but is always alert, ready and on the watch for new impressions.

So the child babbles of unimportant matters; he sees all and tells all. He forgets nothing recently learned or that affects him keenly. After the fourth or fifth year recollections become very durable and are better as we grow older. The child's organs of retentiveness are not stable till the fourth or fifth year; he does not see or hear, or recognize stably till the fourth year or thereabouts, hence after this, when the brain is more retentive, when the power to retain and recall is developed, recollections are more accessible, although impressions made at the first period are latent in the mind, for the fact that they are sometimes unexpectedly recalled shows that consciousness may be excited to recall these dormant spots in recollection. It may indeed be questioned if anything is ever really obliterated from the mind, when states of consciousness may recall things supposed to be forgotten, and dreams may be said to sometimes present ancestral memories mixed with the acquired in a jumbled way. Association causes "a bit of song our mothers used to sing, or a bit of landscape lighted up by our childhood sun to reappear." The recollections of childhood are the last to disappear in mental disease. Memory is lost in the reverse chronological order of its acquisition. In story-telling the child lays stress on the exact words and wants no change; later he interpolates and improves and changes by his imagination being at work. An imbecile has to go back to Monday in naming days of the week, and cannot begin with Thursday or some other day.

Lubbock found a difference in memory between bees in a hive by testing individuals as to their recollection of newly-made en-

⁷ Nicolay, *Les Enfants mal élevés*, p. 318.

⁸ G. Dros, *L'Enfant*.

trances to the hive. Certain bees never could adapt themselves to the changed door; there seemed to be a lack of adjustability to new conditions of memory, the old association fastening them to old performances.

Memories are more numerous than the senses, for one recalls forms and may still be a little sensitive to colors. Memory corresponds to each of the five senses and also to different operations of the mind, and there are great irregularities in memory. Successive perceptions acquire value only when memory preserves them, and when it renders possible comparisons between new perceptions that follow. Compayré does not think that the perception constitutes an intelligent act in the highest sense. Perception forced upon the mind does not show the activity of the brain. It is another matter when by means of memory a comparison can be made between a past and a present perception. Judgment by comparison continually increased forms the human mind.

Perception, memory and imagination are three distinct terms, three successive and correlative stages of intellectual development. The child remembers only what he perceives. Imagination presupposes memory. Images are of two kinds—the exact and inexact—and memory corresponds to them. To have combination invention of active imagination it is necessary to have a large number of sensible representations.

A child sees snow for the first time, though his ancestry have perhaps also seen it for millions of years before, and he may have also seen mountains, but not mountains of snow, yet his imagination may join the two. But in this case also ancestral memory may play a part, for mountains of snow have undoubtedly been seen by many of our progenitors. It suggests that if recent experiences cohere with the ancestral in memory then the imagination would be more impressed in such cases. You cannot imagine what you have not some basis for in experience. In a picture a child will recognize details as a man, a house, etc., but not the landscape, though he may be conscious of its familiarity to him; he is not yet able to give expression to his impressions of it. The imagination runs riot in dreams, and it is supposable that dreaming furthers imagination in the child, the process being

dependent upon changes in blood supply to the brain. Taine remarks:⁹ "The mental state of little children is in many respects that of primitive peoples in the mythological and poetic period. The child would create a new mythology if left alone. His touching faith in accepting your lying fables, and his weaving them into the fabric of his own fancies is proof of his natural disposition. The child invests inanimate objects with life and feeling and personifies them; he makes gods of them sometimes, just as he will humanize animals and be a prey to Aesop's fables, 'The rainbow is asleep,' 'the moon is broken,' 'the moon is mended,' 'the sun has gone to bed,' 'the bent pin is lame,' 'tomorrow he will get up and eat a piece of bread and butter,' are all childish anthropomorphisms identical with savage ideas. He talks to his doll, he says his dream is naughty, he asks 'what does the rabbit say,' and 'what does the big tree say?'"

George Sand contests Rousseau's idea of explaining things to children. She would preserve the marvelous in the child. Some teachers adhere to the idea that the primitive dispositions should be catered to, and in an extreme view of this, decency, manners, behavior should be postponed indefinitely. In my opinion the ultra-animal is difficult enough to improve upon, and the sooner we begin to try to do so the better it will be for the future of the child. This can be practiced reasonably, and when a child becomes capable of proper instruction he should be taught to abandon his cruelty, his intense selfishness, his general savagery. To pander to them when he is capable of being improved is to do him a disservice. One mistaken educator would encourage slang and roughness in children because such things are natural. He mistakes these things as stepping stones to better language and behavior, and might as well insist upon fingers being used at meals and fighting over food at the table as our progenitors did.

To take the marvelous out of a child is said to go against his nature, but is it useful to a child to be loaded with lies that frighten him through life and make him a prey to humbugs and exploiters of ignorance? Better curb too great indulgence in imagination as feverish, as animal.

⁹ *Revue Philosophique*, 1876. Lib. I, p. 14.

Savages dream of a paradise where all their bows and arrows and boats will be present.

The child may be allowed to delight in fancies and at the same time be taught not to believe in them. He can have the operation of his mind explained to him without allowing it to lead him astray. It is not necessary for adults to believe in poetic fancies, and the child knows that playing is not real. Imagination is one thing and belief is another. The child can play that his toys are alive without being lied to that it is really so. He loves to pretend that he is deceiving himself, and this is true of many adults. "Pretty" means a new pleasure to the child, and those who contribute to the child's pleasures are the most loved and hence the selfish basis of affection.

Consciousness develops first for impressions. Lastly in the adult comes the memory of groups of events and of the individual as the one to whom these events occurred, the infant does not know himself as a unit, nor can he tell his shoe from his foot, as part of his anatomy. Consciousness is thus resolvable, so far as the adult is concerned, into a memory of memories. The impressions made upon us constitute the first ground for consciousness, disconnected, unassociated, and finally the recollection that the recollections occurred, the memory of the memories is another kind of consciousness.

In attention the eye is fixed, the motions are lessened, other functions are checked, the aim is centralized. It is an expression of the desire to know more, curiosity, inquiry, placing the person under the best conditions to learn, it is listening, looking intently, or the other senses may be made equally attentive; you can taste, touch or smell attentively.

Association of ideas merely recalls memories, and education in facts shows how difficult it is to arouse proper associations. The infant finally learns that water wets, the sun dries. It is merely exercising a memory of consecutively related matters, or simultaneous events, a picture presented to the mind is recalled. Dreams faultily relate these impressions, often inverting sequences or causes and effects.

Colored hearing and seeing colors for certain numbers or words, could be due to vascular association. These colors change

with age. The color is simultaneously excited in the brain when the figures or words occur, probably as survivals of some early operation of fancy, or as an association.

The questions of children show the dawn of reason. "Has the moon wings?" "Where do all the days go?" The incessant whine of "Why?" is familiar to parents, or its equivalent, "What for?"

Children are very susceptible to precedent, custom and general rule. Permission makes a thing right with them. The child tries to tuck away isolated facts into some generalization, after the ability to generalize has appeared. He sees some things made, and wants to know who made trees, who made God, and so on.

A child's logic is merciless and worth observing, in contrast with many of the adult's tendencies to shirk and muddle thought.

The anthropomorphic idea is strong in children. The child says the tree is to make the wind blow, and savages entertain this idea, reversing cause and effect, a failure, also, of the highest intellects where unfamiliar matters are to be judged.

"Why don't God kill the devil?" and "Why can't we see two things with two eyes?" the child asks. Also, "If I had gone upstairs, could God make it that I hadn't?" Theologians, according to Erasmus,¹⁰ debated over "Can God make a thing done not to have been done?"

The child begins with ideas of anthropomorphism and passes to second-hand, adopted ideas of monotheism.

There is a mental disorder known as *Grübelsucht*, or doubting insanity, which leaves the adult mind in some such puzzling state. The *Grübelsucht*, why is a glass a glass, etc., is thus reversionary, and a child shows the savage early type of brain working to which the person with doubt affliction is atavistic.

A child's questions may be symptoms of peevishness and irritability, to be cured by healthy distraction, or a romp, says Perez.

The savage and child readiness to accept dreams as real, or as having significance, and its confusion of dreams with realities, resembles also the lunatic's inability to correct illusions and hallucinations. Old people are supposed to become little again by some children. "When I get big and you are little, I will whip

¹⁰ Froude, Letters of Erasmus, Lecture VII.

you!" This can be from a mental balancing of the see-saw of life by the child, who thinks that if one grows big the big ones should grow little.

A child gives you his shoe when you ask for it, and if you tell him to give you his foot the baby will take his foot in his hand to give it to you, as he does not yet realize his personal make-up as consolidated. He regards his foot as a separate toy, and does not know that he can move it without holding it in his hands, though he sees it moving about. He treats his toes as toys, and puts them in his mouth. His will is not within his recollection, and he does not know yet what he can do with his limbs, or how he can do it. At first the child does not recognize his own image in the mirror, but finally, by noting agreements of the image with his hand and other movements, he infers that the image is his. Preyer's boy did this by the twenty-first month, and knew his mother in the glass by the sixtieth week. The linguistic efforts of a child resemble those of savages, and they adopt hieroglyphic pictures likewise. The child does not separate in imagination what he sees from what he has seen, or resolve what he is able to see at one time; for he draws three sides of a house as in view at one instant.

Children have vague ideas of time. They talk of days as though they were things, as moving things. "Where is yesterday gone to?" "Where will tomorrow come from?"

The child reduces all abstractions to concrete, living realities, and it is likely that abstractions in the adult are merely concrete substitutions. An hour is an eternity at school. Infants' first words are recognition signs, like "da," as it points to the object, just as monkeys could announce things in the distance by looks and exclamations. "Atta," all gone, says Preyer's little boy, to indicate an empty glass, or that the light is out, or the departure of a thing, so it comprehends situations as a movement. Motion with children and primitive people is mixed up with the mover, and Max Müller notes this early confusion in language of the mover and moved as one idea. Another child extended its terminal exclamation to the ending of music, the closing of a drawer, the dropping of something, and so on.

Minto¹¹ tells of a child who called his nurse mambro, and then gave the same name to her sewing machine (probably in a possessive sense); then, by analogy to a hand organ, and later by association of hand organ with monkey, he called his rubber monkey mambro, all within two years, and something of the flux of early languages can be conceived in this. Too little and too much can be confused, also yesterday and tomorrow, unsuitable in quantity in one case and time not present in the other. Abstract relations are acquired slowly. Learn and teach call up pictures of acts. Buying is imaged as over the counter. A parasol blown about was a "windy parasol," and a stone that made her hand sore was a very "sore stone." The child extends a recognition sign of one object to another object through some fancied, often not real, resemblance; the crackling of fire is called "barking" in a childish classification. Dipping bread in gravy is "bath." Door was anything that stopped an exit, as a cork, and the table to his high chair. The tendency is thus to express the abstract by a concretism; boy and little is sometimes mamma and baby, a small coin is a baby dollar. Romaine's daughter pointed out the sheep in a picture as "mamma ba" and "ilda ba," "too big" is too difficult. Darwin's child used quack for duck (association onomatopœia), then extended this to water and to other fluids, then used the word for all birds and insects; resemblances and association with them and generalization form the concrete. The child sees things together and thinks that they are one thing; so does the savage. Tribes having no abstract signs use metaphors as the child does, and our language has traces of this in such words as imbecile, which was weak, originally meaning leaning on a staff. "Tell wind" was a weather vane.

Savages shape new-names out of familiar ones, the Aztecs called a boat a water house. Sentences are founded on the basis of early savage construction. "Teacher I beat, deceive, scold, no, I love honor, yes," are deaf-mute and child expressions. Pictures of acts joined to negatives, shakes, and positive to nods of head (acts). Fear, pleasure, pain, discontent and also content, misery, gladness, are clearly expressed by the child as bodily comfort and discomfort. From the scream to the whine and

¹¹ Logic University Extension Manual, pp. 88-94.

whimper, or laugh and smile. Fear is shown by hiding the face, grave looks, tremblings. Suddenness and volume of sound may frighten at first, and children may cry at first hearing a piano. Animals are feared when first seen. What frightened one child may delight another at about the same age. The child indulges in angry outbursts when its raw animal desires are opposed. Hitting out right and left, smashing, destructive, howling like the savage it is, and the madman it may become. Preyer noticed these things in the 17th month. At two years Darwin's boy threw things at those who opposed him. A child of four would bang his chair or his toys, sometimes biting and threatening them. A child becomes angry, resentful and miserable if another child gets something he wants, but the imposition of authority provokes these storms most. The child's self, its appetite and satisfactions, are the centers of its existence, boys more so than girls, and sometimes there is an atrophy of jealousy in the more gentle and affectionate. He enjoys release from restraint, as: "I have had a nice time; mamma is sick abed." Want of sympathy of children is caused by absence of experience or realization of others' suffering. Teasing and cruelty are inherent. Children are fond of what they can boss or tyrannize over—cats, dogs, chickens, or each other. These pander to their feeling of self-importance. Children secrete things, adopt ruses, or act lies. They flatter and love to escape punishment, or to get what they want. Vanity is vast in children. Child morality is inconsistent and wanting in intensity. It is half formed and some traits tend to choke the others. Education alone organizes, completes and regulates the propensities.

The cruelty of children is that of savages, and the vivid imaginations of youngsters is exactly that of the early ages, when boastfulness and excessive vanity abounded, when fairy tales were believed in by adults, and ghost stories frightened entire villages, and rank superstition controlled entire nations. The disposition to lie is an innate instinct of the child, and represents the age that still prevails among Oriental people when and with whom the advantages of telling the truth have not been learned. Every child is a natural born thief, he cannot understand why he should not take anything he sees or wants, but realizes that he must not

be caught stealing, and these propensities vary in degrees both among children and races. For example, one child or one race may be disposed to lie, but not inclined very much to steal; the propensity to cruelty, to murder, may also be similarly developed where truthfulness and respect for the rights of others may exist. This shows that what are usually grouped under the head of virtues may be wholly separate matters of expediency. One child may be cruel, but not mean in other respects; another may lie and not be cruel, or may not steal; one may be naturally indisposed to any of these propensities, while a defective may combine all the shortcomings of a remote ancestry, above whose mental status he has failed to develop. The mischievousness of the young resembles that of the monkeys, and their destructiveness is also that of monkeys and some madmen. The emotionalism of a child and undue response to slight causes are like those of our remote ancestry, a survival of which can be observed in camp meetings and among untrained people generally. The love of jingle and rhyme, mere sound without sense, is an infantile and barbarous inclination. Among children of all races and negro adults there is admiration for resounding words and mystery, and the meaning of the words or the reasonableness of the mystery appear to be of no consequence. The curiosity of the child is of a low animal nature which contents itself with mere surprise, and seldom goes further than a very superficial inquiry into causes, or is satisfied with very shallow explanations. The imitative tendency of the child is seen in games in some of which the manners and customs of long-forgotten people have been preserved; for example, counting out games are handed down from the days of human sacrifice, when the priests selected those who were to be killed, and the game of tag has come down from mimicry of the capture of prisoners, the tag being a symbol to indicate the one who was to be killed or to be taken prisoner. Children, savages and degenerates give nicknames and incline to tattooing the skin. The ability to climb trees, romp, caper and squabble is the child's inheritance from its monkey-like ancestry, and the liking to dig caves and hide in them, to be able to rush out and surprise the helpless, to gather plunder in them, and talk over plans of con-

quest, go back to troglodyte days, when stone-age men often lived in natural cavities in the earth.

Cultivated childhood often fails to show some of the early aboriginal traits so well, because they are modified and abridged. Cope's law of acceleration comes in to make the civilized youngster pass through his ultra-animal and savage days quicker than was the case with previous generations. But compare children of the purlieus, with their ferocity, quick instincts and ape-like manners, nearly as bad as those of the children of savages who should be even more ape-like than the civilized children, though savages menace their offspring so much as to intensify the natural fear transmitted by animal ancestry, and the majority of savages are cowardly in some respects, particularly in the dark, notwithstanding romances to the contrary. Youthful embezzlers of about nineteen and under are frequent. At this time reason is not strongly enough developed to resist temptation. It is difficult to apply the experience of others, but it is best to be lenient and to instruct children against such dangers. Man being by nature a thief, it is not till riper years that he can steal with judgment and on a large scale. The youngster has not learned full expediency nor the difference between petty thefts and syndicate robbery on a vast scale. The acquisition of a broader intelligence enables him to steal according to the rules of the game as played in civilized communities. A much broader intellect teaches him to despise theft, even of the safer and greater kind.

W. T. Ham¹² says: "The orphaned and outcast child becomes precociously world wise. But the school can scarcely reclaim the gamin from the streets of Paris or New York. He has become as cunning and self-helpful as the water rat, but not in ethical or spiritual methods. He should have been held back from the bitter lessons of life by the shielding hand of the family. He would then have become a positive influence for civilization in its height and depth. As a gamin he can live a life only a little above that of the water rat, and is fitted only to feed the fires of revolution." Victor Hugo, in *Les Misérables*, gives a picture of the gamin's life, and shows his genesis through neglect of family care in infancy. Little Garroche and his two brothers, a

¹² Psychologic Foundations of Education, p. 144.

solemn and pathetic history! Undisciplined youngsters are apt to be brutal, and later the world has to kick them into shape, which it does in the most vigorous way. Parents who indulge and spoil their children, and who are too tender with them to reprove or punish them for bad behavior, allow their offspring to develop their native animality and savagery, and this results in greater suffering to the indulged child, because the world is sure to heap up abuse, corporeal and mental, which the parents could have averted by enlightened correction. Children feel happier when controlled and regulated, and they admit it, whereas absence of control makes them miserable and causes them to hate themselves and all about them. Some parents regard their children as too good to punish, and wonder finally that these "perfect ones" should develop into beasts.

Intractable children refuse to take the advice of parents, but later, when the results of their disobedience appear, they willingly permit the parents to bear the consequences. Spencer, in his "Education," points out the necessity of having children experience the effects of their offenses, as where a toy is replaced when destroyed, or where the father comes to the financial rescue of a spendthrift son, the incentives to carefulness and thrift are absent.

The native selfishness of indulged children crops out disagreeably often in the best of them, as where they have been shielded and provided for carefully, and they may be fairly respectful in return, but when parents become dependent on the children the latter often grow abusive, and have been known to turn their parents into the street.

The order in which mental traits develop from childhood to age are: Perception, memory, imagination, emotionalism, imperfect reasoning, better reasoning, less emotionalism, and the moral traits are last. As evidence of self-consciousness being slow to appear, Preyer's infant bit his own arm, though not recognizing it as part of himself. But the child is a born diplomat often, as in the combination of a large and small apple and a little boy, who says to a little girl: "Are you greedy?" "No." "Then you can have the first choice." The trickiness, cunning, the ability to conspire, scheme, swindle, are not at all exalted faculties, for the

youngest child and the meanest savage have all these traits inborn and ready to exercise.

Jules Simon says that "the nation with the best schools is the first nation in the world," but pedagogy has a long road before it will evolve to an application of Spencer's and Schopenhauer's conceptions of methods of instruction. Spencer urges the acquirement of learning that is most directly helpful in getting a living, and postponing the ornamental studies till later years. Schopenhauer divides studies into the direct, or natural, with object lessons, and the artificial, through books, which impart general ideas before concrete facts are sufficiently accumulated and memorized. The youth is crammed with mistaken general notions, which he finds harmful more than helpful when he tries to apply them after leaving school, through not being taught to think for himself. To acquire a knowledge of the world, Schopenhauer considers as the aim of all education, and he lays stress upon beginning this knowledge at the right end, that observation should precede general ideas and that narrow ideas should precede those of a wide range. But, as Huxley says, education begins in the cradle and through every day of life, and if a person did not acquire more education out of school than in it, he would be unable to cross a street without being run over. One of the most important items of pernicious educational influence Schopenhauer¹³ dilates on is the average novel. In learning the ways of the world which are so important for the youth to know, "the difficulty is doubled by novels which represent a state of things in life and the world, such as in fact does not exist. Youth is credulous and accepts those views of life which then become part and parcel of the mind; so that instead of a merely negative condition of ignorance, you have positive error, a whole tissue of false notions to start with, and at a later date these actually spoil the schooling of experience and put a wrong construction on the lessons it teaches. If before this the youth had no light at all to guide him, he is now misled by a will-o'-the-wisp; still more often is this the case with the girl. They have both had a false view of life foisted on them by reading novels, and expectations have been aroused that never can be fulfilled. This generally

¹³ Studies in Pessimism, Education.

exercises a baneful influence on their whole life. In this respect those whose youth has allowed them no time or opportunity for reading novels, those who work with their hands, and the like, are in a position of decided advantage."

If what is false in novels were explained to children it might answer to let them read anything, but where it is possible to select their reading it is far best to direct their ideas wholesomely and healthfully, by proper books.

The writings of Charles Reade, Dickens, W. Clarke Russell direct attention to necessary reforms in institutions and in society generally. Incidentally people acquire reform information reluctantly, they do not like to hear of disagreeable matters, such as cruelties, demagoguism and official rascality. When Dickens and others teach such things the world is the gainer, but it has to be amused into a knowledge of the ills of the world and taught as kindergarten children through interesting and not over-exerting attention. Direct statements of reform matters, of necessity, would not be read or understood. Then the "novel with a purpose" must be skillfully disguised as such to be read at all. People take alarm at the idea of being instructed by stealth, and as a rule the "novel with a purpose" has to be written by a master hand to be tolerated, and, unfortunately, the bulk of such novels are written by uninformed persons, and the purpose itself is too frequently bigotry or cant. Mark Twain will, in all future ages, be recognized as one who educated his readers to important, yes, vital, matters, while amusing them. There is no more potent argument than good-natured ridicule. The pathos of his *Joan of Arc*, his *Gilded Age* and *Prince and Pauper* affects all who read those works. *Innocents Abroad* has brushed away the cobwebs of superstition from legions of brains, and in many such ways this genial author has helped his fellow-man and the world is the better for his having lived. This mention is quite appropriate to a chapter on Development of the Brain.

CHAPTER XII.

EVOLUTION OF THE BRAIN.

Some savages found a chronometer and loyally gave it to their chief, who consulted his priest as to its nature. The ticking and movements warranted the holy man in the belief that it lived; hence the watch must have been made by the Great Spirit.

But it was noticed that the hands revolved in time with the sun's path in the sky. A speculative fellow suggested the possibility of the wheel motions being the cause of this and it became necessary to behead him to prevent the spread of such heterodoxy, for religious authority had started the legend that the spirit of the watch was sufficient to cause all it was seen and heard to do. Someway the idea was not killed, if the man had been, and soon the priests assented to the dead man's claim, and it became a superstition to think otherwise; thus illustrating that "religion is superstition in fashion, and superstition is religion out of fashion."

Another had the hardihood of a Harvey in declaring that the balance wheel and hair spring moved the wheels. A religious war was suppressed by the prompt cremation of this pundit, and later allegations of the kind were argued by feeding the allegator to the alligators, by imprisonment, or by ostracism.

Finally the main spring was suggested as the originator of the watch spirit; but the triumphant query of the priests was: "What is the force that moves the main spring?" When the watch ran down it was said to have died, and the spiritites jeered at the dissectors who tried to demonstrate the main spring sufficiency. Granting that the force did lie in that part, how can you expect to catch the mind, the soul that has gone from it? Thereafter when a dusky thinker tried to demonstrate to his brother savages

the nature of tension, by holding down a bough and allowing it to spring back, some complained that thinking made the head ache, others that the comparison was sacrilegious, and still others that this sort of nonsense did not gain them food and it was best to keep out of scrapes by deferring to kingly and priestly authority—the safe position of mediocrity.

The watch is man, its ticks his heart beats; and from prehistoric times the contest over his nature has been as to what he was, his whence and whither. That his muscles by contracting moved the bones was damnable heresy; that the blood circulated, that the nerves controlled the muscles were assertions offensive to religion and “common sense.”

Ignorance imprisoned Galileo and Roger Bacon, harassed Copernicus, burned Giordano Bruno and Servetus and made hypocrites of Kepler and Tycho Brahe for their mechanical ideas of nature. Knowledge has wrested the faggot and torch from Ignorance, but he and his offspring, Superstition, still live, and whosoever dares to think for himself finds their power abounding in society, in the church, and among lawmakers and law administrators.

That man should be studied objectively as we would a beetle, a tree or a watch startles us when the suggestion is first heard, for in our conceit, dating everything to and from ourselves, wrapped in our savage egotism, we can conceive of nothing greater than man and must needs build an anthropomorphic deity; we build God in our own image and imagine him a Big Man.

The olden metaphysical, essentially the theological, method of studying mind wholly ignored the body, scoffed at the possibility of brain having anything to do with thought, reason, feeling, sensation, etc. That there was such a thing as an orderly, decent law in nature was a conception of very slow growth in the evolution of thought. Everything was supposed to be under the direct control of a capricious higher power. Step by step the mechanical laws that controlled the stars, the planets, the earth, were established, but plants, animals and man were separated off, as under special laws, and this is the first phase of dualism; two methods of control; direct from God for the animate, indirect

through nature for the inanimate. Plants and animals were successively wrested from the direct control dogma, but man himself was held to be exempt from natural laws until his make-up was carefully examined, and now we find that while his general anatomy is conceded to be similar to that of the beasts; his muscles, bones, blood vessels and tissues generally, the theologically biased entrenched themselves behind superficial differences between the appearances of the brain of man and that of animals.

In vain has it been demonstrated that there is not a single feature in the human brain that may not be shown to exist in the brains of apes—dualists will not concede the possibility of anatomical resemblances affecting their position where previously they defied production of the proof of such resemblances.

The olden philosophers adopted the introspective or subjective method of mental study. Practically they shut their eyes, put cotton in their ears and endeavored to think out the nature of mind, and their ramblings are worthy of their methods.

The physiological or objective study gave most promise early in this century and David Hartley, a disciple of Locke, was one of the ablest of the physiological pioneers in the realms of sensation and mind. Bain, Herbert Spencer and Wundt are the most notable of our day.

Nature is the only thing worth studying for the simple reason that there is nothing but nature in the universe. By the merest glance at the habits of lower animals man is enabled to see his own instincts and even the workings of his intellect in their simplest expression. Man loves, hates, grieves, enjoys. So does the dog. Every animal, including man, moves about in search of food, grows and may propagate his kind. The mind is the sensory part of psychic and physical nature, the motor part of mind, and the unconscious factors are customarily neglected in regarding what is commonly called the mind.

A good crus is necessary to a good brain, so the motor part is essential to intelligence and large crura are evidences of a good cerebral output; that is, the individual has extra means of exploding his impressions.

Savage¹ says that "as long as the mind is supposed to be

¹ On Insanity, p. 1.

located in the skull we shall make little progress; we must be more general in our pathology if we are to understand our subject."

Not only is there a relationship between all that is done by the body and mind of man and other animals, and the behavior of chemical elements, but the former depends upon the latter, and is merely a different expression of the same thing. We think and move about because nitrogen tends to escape from molecular combinations, and oxygen, on the contrary, seeks to unite with them; and, for similar reasons, we are born, eat, grow, reproduce and die. Because of the disposition like and unlike elementary atoms have to unite to form molecules we hunger and love—the two feelings that control the world, as Schiller poetically affirms. An application of chemistry can even explain why one of these feelings may sacrifice the other.

The affinity of atoms for one another may be taken as the cause of hunger; the higher affections may be shown to have sprung from hunger by positive illustrations; and, finally, it can be shown that the insane often merge every higher desire into acquisitiveness, or a beastly food hunger; or that by mind degeneration atavism, or its failure to develop, in certain respects, beyond savagery, every regard for virtue, honor, love, even self-respect, may be lost in the craving for money, which represents the means of animal gratification.

Nor is this knowledge useless, for it bids you lift yourself above bartering the best part of you, sentiment and honor, for a price. It tells you that you may pay too dearly for peace and comfort by insuring for yourself and progeny moral death. From these and similar considerations we may conceive of the foundation and some of the superstructure of a practical psychology based upon chemistry.

A teacher of science, with chemistry and physics as arguments, cannot appeal to the metaphysicians nor the theologians who are usually unprovided with elementary knowledge of mundane things. But they will deny that it is necessary to know chemistry or natural science to deal with theology or metaphysics. True enough, but as the natural sciences now include not only what concerns man but his mind and social relations, it

follows that the theologian and metaphysician never can, as such, fathom psychology and that their methods cannot deal with the mind.

If they treat of subjective phenomena they are in the plight of a clock that would call the jars of its cog wheels, spirit, mind, thought. If objective matters are considered by them, their methods are those of the savage who studies the wheezes, puffs, snorts, whistlings, rattle, groan of a locomotive, observes its wheels revolve, its surprising speed, and, content with knowing what it does, is incapable of understanding the how and why, because not accustomed to analyze machinery or comprehend its principles. The savage assigns a spirit to the engine, as the dualist does to man, and both are satisfied that all things are thus explained. It seems astonishing the belief could survive to-day that mind exists independent of its organ, the brain, or that it is useless to study the mechanism of thought because of a superstitious fancy that there is some *tertium quid* that can never be apprehended.

Yellowlees says that the brain of the scoundrel cannot be told from that of a Christian hero, nor that of the sane from the insane. Such sweeping claims have come to be greatly modified, as much depends on the method of examination, and granting the truth of the assertion in many cases, it should tell us that circumstances working upon identical materials may create fortunate and unfortunate, the law-abiding and the criminal. As for insanity the chemist has begun to examine the contents of the blood vessels to see if insanity is not in many cases merely a poisoned brain circulation.

If we could get out of ourselves and regard everything objectively, unbiased by our feelings and the familiarity that blinds and deludes, we would be able to conceive this planet reduced to the size of a hickory nut, upon whose surface a magnifying apparatus would reveal lesser specs changing places, forms and colors. Further magnification would show us man looking like a period, growing to the stature of an exclamation point (probably a theist), or an interrogation point (probably a scientist). From these spring other dots, and the larger ones dissolve. All move about, some collide, others cling together, still others avoid one

another. These simple movements, further inspection tells us, are caused by position changes effected by the more intimate particles that compose the small objects.

Allowing the world with its flora and fauna to regain its natural size and placing a man under our powerful microscope until he appears to be as large as the earth, we learn that all the grosser movements he has made were occasioned by the collision, clinging together, movements of avoidance and other place changes on the part of little spheres like bird shot and cricket balls, known as atoms and molecules. A very close and constant arrangement of these elementary balls constitute his bones, which are pulled to and fro by the sidewise and lengthwise rush of similar balls not so compactly arranged, which form the muscles. Great nerve cables of millet-seed like grains, here and there rapidly crowd one another, in turn producing commotion among the muscle components. But it is difficult to discern which is cause or effect in all this swirl. The big balls strike the little ones and start them agog, the little ones retaliate, to be in turn hit at by the larger. In fact cause and effect exchange places, and everything this bag of millet-seed, bird shot and cricket balls does depends upon the preponderance of one kind of molecules over the others, and an endless series of accidents.

Here, for example, was an oxygen atom jerking away from less congenial company to seize upon two hydrogen atoms, the three balls then becoming known as a molecule of water, countless groups of which could be seen everywhere in our giant. Many of these H_2O groups were very exclusively associating only with their own kind and repelling the advances of other molecules which sought their company; but here and there one of the objectionable molecules happened to meet with some atoms it wanted and could capture and, presto, metamorphosis. The formerly repulsive A, which B avoided, picked up an X and no time was lost before ABX became a new molecular candidate for the envy, sycophancy and wiles of others. This X was often a metallic atom.

Restoring our man to his less than six feet in height, his molecular make-up disappeared and we find that accidents of atomic grouping make this particular person present an ugly

appearance. His comrades with more pleasing visages are not attracted to him; women deride and repel him. Chance fills his pockets with the element aurum, and a change occurs comparable to the one noted before. His acquisition enables him to select whom he pleases as associates. One known as Fool and another called Knave became gilded and secured the sisters Cupidity, who, though detesting their mates, helped them to multiply their kind. These comparisons are not strained. There is more than simile or metaphor in them. If a house be built of bricks does not the pile of bricks preserve the individual brick nature? Because it is a house it is none the less a brick pile, with all the properties, such as hardness, porosity, unflammability, contained in each separate brick. Grouping of atoms into molecules and these into compound molecules do not make such combinations any the less chemical, even though man is the thing built from the molecules.

We may start with the simple one-celled animal called the amœba. It is a representative of the modified cell that is found to produce, by multiplication of itself, all animal tissues. The muscles, membranes, skin, etc., of man are made up of cell upon cell of protoplasmic origin, closely allied to this unicellular organism, and the white blood corpuscles are called amœboid because they resemble the amœbæ surprisingly in all things.

This amœba may be found, under the microscope, in stagnant water, damp earth, or in animal matter, creeping about with activity, but no constancy of direction. It seems to be a living speck of white of egg; the minute granules in it flowing first to one part, then another; pushing out "false feet" into which the entire mass flows, and so moves about. When it encounters food, usually minute vegetable particles, the substance passes into the animal composition, and what cannot be assimilated is merely moved away from—excreted.

Insignificant as these amœbic motions appear, they are weighted with the most important problems life can present, for the quarrel is over what causes amœbæ to move at all. Cope and others assign it to consciousness, or will power. Low forms of life, like this, may be kept dried and apparently dead, indefin-

itely, but moisture restores activity. Of itself this fact shows the mechanical nature of life.

The main composition of the protoplasm of the amoeba, is carbon, hydrogen, oxygen and nitrogen, represented by the symbols C, H, O, N. It feeds upon plants which contain similar elements. In fact, it eats that to which it is chemically attracted. Its hunger, then, is chemical affinity. Assimilation, eating, is a process of molecular exchange, chemical saturation. Hydrogen hungers for oxygen. The amoebic protoplasm molecules CHON hunger for CHON.²

We have gained our first step in mental science. A feeling, a desire, is reduced to a chemical explanation. Remember it, for upon it every subsequent step depends:

1. Hunger is chemical affinity, the desire inherent in atoms for one another. Hunger is the first, the primitive desire, so acknowledged by thinkers from other points of view, but they did not see what we now claim to be its origin. Growth of the mass must follow as the molecules add to their number, size and weight, by chemical combinations; by eating. This is evident and axiomatic, but simple as it appears, like a geometrical axiom it is liable to be obscured or lost sight of as we advance.

Growth, thus, is our second step gained:

2. Growth arises from chemical saturation, from hunger satisfaction, from eating. This is more evident than 1, in all animal life.

Next the amoeba reproduces itself by the simplest possible

² So much depends and could be said upon this inference, it can be but cursorily dealt with here. The objection to the atomic affinity likeness of hunger being in that protoplasm converts dead into living molecules, may be met by Hoppe-Seyler's claim (Chemical-Physiology Institute Inaugural Address) that living protoplasm consisted of anhydrous oxy-hydro-carbon molecules capable of motion in a hydrated medium. When such molecules combined with the water in which they moved, then the protoplasm was dead. Living protoplasm is like quantities of CHON moving in water: H_2O ; now if CHON, in certain quantities, becomes $CHONH_2O$ (while the symbolism is far from being exact), an idea of what occurs when protoplasm dies (the machine stoppage) may be gained. The next step toward dissolution being the breaking up of the compound altogether; the dismantling of the machine. But it is impossible to go deeply into such matters in popular essays.

means, it divides as a consequence of overgrowth, and we then have two amoebæ; the new additional form is excreted off from the old one, and observing that such particles as silica or lime carbonate, which it cannot take up are repelled, rejected, excreted, we find as a consequence that excretion depends upon, or is:

- a, chemical indifference or repulsion,
- b, a consequence of assimilation,
- c, an overgrowth consequence, in reproduction.
3. Excretion is a consequence of hunger satisfaction.
4. Reproduction is a consequence of growth, and a process of excretion.

The amoeba absorbs oxygen and exhales carbonic acid; it breathes. But oxygen is a food, and inhalation is but a process of assimilation, hence breathing is eating and proposition 1 includes it. The rejected, exhaled carbonic acid is excreted; so proposition 3 includes that matter.

Prehension, or taking hold of its food is another function, but it is only an effect of 1; attraction of molecules. The amoeba moves about, but the same molecular attractions account for such movements partly; light sets up a series of attractive motions in it; heat increases within certain limits its activity; eddies move it, and the simplest explanation of light and heat attraction would be through their expanding the nearest portion acted upon, setting up a flow of granules into that part, resulting in a forward movement toward the light. The composition of forces would account even for its occasionally moving away from its food, thus:

Let A represent the position of the amoeba at one instant; the line A C the direction, and force, 10, of attraction of a ray of heat and light. The line A B, at right angles to A C, with the attraction 5 of a diatom, or some other molecular combination which is food and has attractive affinity for the amoeba. The parallelogram of forces will decide D to be the direction in which A will move; apparently away from its food.

These motions can be made more complex by the inconstancy of environment, heat, light, electricity, sound, chemism, eddies, all exerting their influences and confusing the directness of motion.

Lastly—

5. Locomotion is due to hunger (chemical affinity) and to other physical forces. We thus have all the life activities of this low animal explained as the result of force and matter. Objectively regarded we have satisfied the conditions, but fault may be found with having brought in the subjective term hunger. This can be disposed of by admitting that we can only judge of hunger objectively in others, whether man, dog, or *amœba*, by what it causes them to do, and comparing such actions with our own under like circumstances, which subjectively we realize to be due to hunger. Perhaps a feeble consciousness is a product of these molecular and mass motions—who can say? We have much of the aboriginal disposition to concede will power or sensibility to any complex mechanical motions. The Zuni Indians worshiped the great Corliss engine at the Chicago water-works, and wanted to cast themselves into its wheels as into the arms of a good spirit; similarly the remark is often made by the intelligent and educated: "That locomotive acts as though it lived," or "That machine almost talks." If we knew the *amœba* to be composed of crystalline matter we would merely wonder at its mechanical motions; because it is flesh-like we assign it life, though we know that flesh and crystals are but chemical elements differently combined.

President Sorby, of the Royal Microscopical Society, estimates that in one one-thousandth of an inch sphere of albumen (protoplasm), there are 530,000,000,000 molecules. With protozoa one-tenth, or one one-hundredth of an inch in size, there would be proportionately more. It becomes possible to conceive how organisms even a hundred-thousandth of an inch can molecularly exist. So the difference between the flea and the elephant, mentally as well as physically, need not be other than a merely quantitative one, for qualitative development may go on with the lesser number of molecules. Thus we surmount the idea that mere size of brain or body has anything to do with relative intellectuality considered as a molecular property.

The albuminoid, protoplasmic, one-celled animal, the *amœba*, may be roughly represented as a pile of chemical atoms, each dot representing a molecule of such atoms. Attracted toward a

piece of alga, which passes into the amœba and causes it to grow. It rejects the uneatable part, and becoming too large, splits—reproduces.

Under the designation chemism we have disposed of moving, breathing, eating; from which as a consequence proceeded growth, reproduction and excretion. We called the chemical attraction involved in eating, hunger, a desire, a feeling, a sensation. Do not let us get confused at this or any other stage, by mixing up terms, or making distinctions where none exist; desires and feelings are sensations from first to last, and we shall so see them to be. Then sensation is nothing but molecular motion. When the little molecules are moving about, from whatever cause, sensation is evoked. It is not sensation that moves them, but the movements produce the sensation; which is a mere incident of the motion as friction heat is to machinery motion. All its motions have regard to satisfying hunger, and its mushy body is constructed to take hold of things. Prehension or taking hold of things is an ability merely developed, but not changed in the higher animal life, for arms, hands and jaws are for food prehension; the legs and feet take hold of the ground in the food search; ribs assist other organs in oxygen (food) prehension. The fundamental life processes having merely more elaborate organs in the higher than in the lower forms, to conserve the same necessary ends. While in this protozoon the only sensation it has refers to eating, all other sensations are differentiated from it, and if you reflect a little, you will know that all thought is ultimately traceable to that homely act. Stop eating for a while and be convinced.

You get from this your first philosophical conception of pain and pleasure. An unsatisfied tension of the amœbic molecules in the one and the act of gratification in the other. Indifference comes with plethora, which causes quiescence or cessation of maximum motion—an important fact, for satiety is akin to death. The filled up amœba does not move. Activity increases in all animal life, within certain limits, with hunger or desire. Satisfaction palls, cloy.

Fancy the molecules that compose protoplasm to be grouped in little piles, and when attracted to other similar molecules a

commotion would occur. If this motion invariably took place under similar influences, then the more these influences occurred the better adjustment would there be to a repetition of them—adaptation and the motion-sensation would become instinctive, automatically induced. Now if food attraction caused this motion once, it is apparent that it can do so again. The repetition of this motion would be one phase of memory. If this molecular disturbance were induced by some other cause than chemical attraction, such as a chance movement of the particles in the amœba, then we have other phases of memory, anticipation, recollection and feelings, such as dreams are made of, imperfect, mixed. The Chladni figures may be cited.

These Chladni forms appear when a glass plate upon which sand is strewn is thrown into vibrations by musical notes. Each figure is definite for its producing note and will be reproduced by that note.

Sensation may be likened to the vibration of a piano string produced in its usual way through the key and hammer stroke. Memory is the reproduction of the same vibrations, whether induced in the usual or some other way.

Summing up what we have deduced from the protoplasmic motions, we have, life processes, such as eating, growth, excretion, reproduction and general locomotory movements accounted for as interacting physical force and matter, with incident and consequent production of pain and pleasure, sensation and memory.

Minds unused to evolutionary conceptions will ask what all this has to do with man and his mentality. Refer to modern text books on physiology, embryology and histology (microscopic anatomy), botanical and zoölogical works, and you will discover statements clearly made or implied throughout, to the effect that man is but a colony of amœba-like cells, grouped and differentiated to effect better the same functions inherent in the original amœba cell. While all the processes are carried on by one dot of protoplasm in the case of the one-celled animal, the many-celled animal, such as man, has certain groups of cells highly developed in one direction, others in another; with the necessary diminution of other abilities in the specially developed

instances, just as the good blacksmith may not be a good clerk, but specialism has developed both as advantageous to society. The clerk and blacksmith are not the less men because specialized, the brain and muscle cells are none the less cells. The association of these functions with their sensations, through an inter-nuncial nervous system, may be likened to the metropolitan and continental linking of interests by telegraphs. In effect this will appear as we proceed, to be more than an analogy; it is homology or identity.

The monistic philosophy shows that society acts as the man acts, and his nature is that of his cells; these in turn are governed by molecular attributes, but that man can react upon his composition and give direction to his acts by conforming better to nature's laws, through knowing those laws; and achieve thereby the maximum allotment of happiness for himself and others.

The brain and nervous system are generally regarded as the centers of mind and sensation. The view is correct enough in one way and wholly erroneous in another, for there are more animals without than with brains, or even nervous systems, to whom mind and sensation cannot properly be denied.

The protoplasmic amoeba, that reduces the problems of physiology to their simplest forms, is irritable. Mechanical irritation, such as the prick of a pin, will stimulate it to accelerated motion. Any living matter that thus explodes energy when stimulated is said to be "irritable." Irritability is the function most highly developed in the nerves, especially the nerve centers, and it is through the motions induced we have the only objective evidence of sensation. If you prick a man and he writhes, you surmise he has felt it; if he does not move you do not know whether he felt the prick or not. Contractions are very common manifestations of irritability, but so interchangeable are "vital" and physical forces, sometimes the stimulus produces heat instead of "vital" movements.

In the protoplasm, from which all the tissues proceed, reside the abilities of all those tissues. For example, the nervous system is eminently irritable, the muscles are eminently contractile; other organs have developed special abilities, such as locomotory, prehensile, gustatory, reproductory, respiratory. What was pos-

sessed undifferentiated by the simple protoplasmic cell has become separately the functions of particular groups of cells. How this came about is the problem of comparative physiology which the theory of evolution is solving. The body and mind are too indissolubly connected to admit of any psychology being other than absurd if all physiological functions are not discussed; but the necessity for condensing compels us to skim over some of the most interesting processes of development with mere references.

The one-celled developed into the many-celled animal, the morula or mulberry form, because the cells, instead of escaping, were bound together by an outer membrane. The morula ate and grew, as did the amoeba, only when it burst by repletion it liberated one-celled animals that afterward became many-celled, simply because the materials that composed the young were split off, inherited, from the parent, and for purely mechanical reasons the life history of parent and offspring would be the same.

The gastrula stage comes next when the many-celled animal, the mulberry form, collapsed and formed a bag with a layer of cells inside and another outside. This stage is represented by a vast number of animals, such as the sea-anemones and worms.

Elongate the gastrula animal, and you have the worm shape. Gradual improvements occurred in some of these forms, as favorable circumstances were encountered, and step by step the rudimentary intestine develops a stomach and other subsidiary organs, as the habits of the descendants change and adaptation is necessary. Blood vessels appear, and their evolution can be easily traced to the twisting of an artery upon itself to form a heart, and further. Likewise the course of limb growth through blunt projections, fins, up to wing or arm and feet successively; the change of swimming bladder into lungs and the advancement of protoplasm into cartilage and some of the latter into unstriped muscle cells, thence into striped muscles. All this came about through accident. The collapsed morula found it had a bag in which albuminous substances could be held and digested better. The cells that lined this bag as naturally and readily developed into special eating cells as politicians become thieves—through opportunity, ability and desire. Special reproductive cells devel-

oped from the internal sac. Every organ may be traced in its growth from the egg (a single protoplasmic cell), and in its successive modifications in series of animals succeeding one another from the amoeba to the man.

That the feeling of love was derived from hunger, and is identical with it in protozoa, has been previously explained. The folly of the metaphysical systems is evident in ignoring the bearings of this most powerful sentiment, and its derivation, upon all life relations.

The relativity of the terms excretion and secretion is noticeable when we study how the cell groups live that make up the body. One set of cells may be situated to receive the unelaborated food, part of which it absorbs and part passes through its cellular contents changed to other conditions. This changed food becomes, perforce, that upon which the next set of cells thrive best, and we may follow these changes from meat and vegetables ingested to the secretion of milk and tears.

Thus we are compelled to shamefully slur over the grand stories biology has to tell in the endeavor to reach the nervous system quickly. But perpetual reference to the other organs must be made to appreciate, anything like adequately, what the brain does.

We have seen that certain cells develop extraordinarily what primarily was the single-cell ability. From the amoeba performing with its one little protoplasmic dot all the life activities we have in the higher metazoa intestinal cells that elaborate food and hold other activities in abeyance, muscle cells that contract to stimuli, ovarian cells that centralize reproduction, lung cells that are mainly respiratory.³

To a greater or less extent the original abilities are preserved in every cell, no matter what function it serves. All cells must eat, secrete, reproduce—some rapidly, others slowly. The work devolving upon them determines how much of and what particular character shall predominate, as with men.

³ Observe that the lung is appended to the upper part of the alimentary canal as evidence of the association of eating and respiration, and that the oviducts and cloaca are connected in birds and embryos of higher animals, indicating the ingestive and excretory nature of multiplication.

When the many-celled animal without a nervous system receives an impression and responds to it by moving, the impulse is propagated from one cell to the next and but sluggish motions are induced. Manifestly it would be an advantage to have a telegraph system to cause instantaneous and united action.

Little amoeba-like animals⁴ happening to live where sand abounded picked up an overcoat of that material by agglutination. The mollusc falling in with chalky and other lime particles, which it separated from its food by excretion, developed its shell because the secretion happened to adhere externally. The hermit crab finds a covering already made, and occupies it by squatter right. It does not matter to any one of these how the advantage befell; it is taken as such and adjusted to. The fighting cock will use the steel gaffs as though they had grown from his legs, nor is the cell a particle more particular. If it find in its environment material that has enough affinity for it to remain in its vicinity, and a life process is subserved by that fact, things chemical and mechanical in nature perpetuate the association by natural selection.

As the rhizopod could not have acquired his covering where there was no sand, the ancestral worm could not have picked up a nervous system in the absence of assimilable phosphates. These nerve compounds had a molecular mode of action altogether different from anything experienced before by the animals. With evolution of higher types the explosive substance was excreted irregularly and later more definitely, as Cope has shown⁵ was the case with the skeletons of early reptilia. Next an encapsulating membrane formed about these lines of phosphatic granules in obedience to the ordinary pathological process that an intermediary tissue forms about any foreign substance as a resultant of the mode of operation of the two tissues. In due time an area of nerve granules finds itself being suppressed at one point and arranged at another until the fully developed nervous system appears.

The possibility of so important a structure as the nervous having been acquired by accident, seems preposterous, but let us

⁴ The rhizopod (*astrodiscus arenaceus*).

⁵ Fossil Batrachia, *American Naturalist*, 1883.

reason from other matters to it. You realize that accident kills many. If you study the matter closer you will be convinced it kills more. Accidents determine such things as marriages and births as well as deaths. Fortune and misfortune are accidental more than anything else.

At first doubtless this was a disease, an excrescence that was By chance and accident is here meant what is generally accepted to be their meanings. Strictly speaking when everything is the outcome of some preceding cause, there can be no such phenomenon as an accident, but in the sense of opposed to design it is a convenient term.

Bony excretions at first indefinitely arranged served but a feeble purpose, but afterward definitely arranged in lines relating the muscles contraction became more direct and useful.

At first all tissues indifferently exuded the bone and nerve granules, but eventually certain cells became the ones best suited to elaborate these materials and we have the osteal and the nerve cells as a result of this high grade evolution.

When nerve granules began to be linearly arranged⁶ even then these rudimentary nerves served but haphazard uses. Each pellet was an excreted compound of phosphorus with organic hydro-carbonaceous materials which, however faintly it exploded, when disturbed, became a new experience in the environment to be reckoned with. Heat and light increased its molecular "kick." Electricity, though less often met with, affected the substance annoying to the animal, but a readjustment occurred on the basis of reconciliation and a new mode of life-working. The cells then were shocked by the new tissue, but such forms as could not rid themselves of it encapsulated it, covered it, just as a bullet in the body would be covered, in time, by a sac. The intercellular distribution of these nerve granules would now exert no effect upon the cells, but whenever, by occasional exposure of the granules to an influence that would cause the explosion, it was discovered that instead of having to wait for motions to be transferred from cell to cell before the entire organism could be affected by motory causes this new tissue conveyed the needed stimulation promptly.

⁶ Kleinenberg's Hydra and Hubrecht's low worm.

to a distant cell in a very simple way. The law of least resistances determined the next step. The granules would, from being diffused, be arranged, by the motions of the low animal, in some kinds of lines, even though badly defined ones. The quick conveyance of impressions made the cell colony more energetic, and wherever this energy happened to conserve life the species with the most definite nerve strands survived.

Hunger would develop colonial motion in the direction of hunger appeasing movements. The part which is most affected, the intestinal tract, becomes for the time being the center of stimuli production.

The law of association steps in to determine what cells shall be united. The general cell need of oxygen establishes a muscular and nervous means for circulation, and other hunger appeasing processes make routes and means elsewhere.

What is known as the neuroglia or gray matter of the nervous system I regard as the product of cells that have developed molecular irritability above all other functions; the fact that this gray matter is without cell membranes counts for nothing—development necessitated this peculiarity.

A highly sensitive neuroglia substance would transmit its irritations rapidly to a contiguous highly contractile muscle, then when the sensitive neuroglia was concealed and nerve granules conveyed the impressions inward the next arrangement appears, the "sensory nerves."

Better definition gives the lines of nerves instead of the plexus.

Then follows an illy arranged set of nerves between the muscles and the gray matter, afterward becoming better arranged as the "motor nerves." This is really what occurs in the embryological development of every animal that has a nervous system at all, as well as in the "phylogeny," or evolutionary progress.

We are now prepared to consider reflex nervous action. Join a lot of these segments and we have the spinal cord and nerves of the connecting link between vertebrates and invertebrates.⁷

Up to this stage indifferent tissues have secreted the nerve

⁷ *Amphioxus lanceolatus*.

granules; thereafter the basis substance of sensation, the neuroglia, A, develops these nerve elements, and under the microscope the homogeneity of the neuroglia disappears, and ascending through intelligence becomes more and more filled with fibrils of fine granules of a nervous character.⁸

Yet development goes on and the neuroglia generates nerve cells, whose office it is to more rapidly and readily form these granules for the axis cylinders of the nerves.

The number of impulses or irritations required to produce a continued contraction in the feebler developed muscles is thirty per second; in the voluntary muscles, such as are concerned in moving the body or limbs, nineteen and one-half per second.⁹ Fewer impulses passing over a nerve result in tremors or trembling. A lowered vitality, such as drunkards exhibit, or when there is emotional diversion, interferes with the proper succession of impulses, and the muscles are tremulous.

The inseparableness of psychic and physical life is evident from lowest to highest, but may be well illustrated by the headless lancelet and the lamprey eel with a feeble but better developed nervous system. The next step essentially represents the spinal cord of the lancelet, with ingoing sensory and outgoing motor nerves. If an irritation passes over one of the first-mentioned nerves and reaches the gray irritable matter of the cord the irritability is communicated up and down the gray and irradiated to the general muscular system through the motor nerves. Diffusion. Now, if a certain sensory nerve bundle became subjected more than others to a peculiar impression the nearest motor nerves would not only respond most energetically, but the gray molecules would perforce arrange themselves better to accommodate the passage of the impulse. Here we have our sensation and memory again, only in this case with special tissues for their seat—the neuroglia. But the motions are just as liable not to serve as to serve a useful purpose, and that is the fact we can observe when a worm or even some low vertebrate is interfered with; their motions do not seem to be properly adjusted to

⁸ Exner.

⁹ Helmholtz.

a reasonable end, as when the eel in escaping wriggles toward instead of away from you. Plainly such low forms as by accident procured a better adjustment and moved in response to stimuli in a way to secure prey and escape enemies would not only survive but multiply by descent the higher forms so instituted, and these improved nervous systems would lift their successors gradually through the vertebrate series to the highest life.

If there be a choice of two routes for the passage of the impulse in the gray matter the wavering between these two routes constitutes hesitation, which we shall see a little later on is the basis of doubt, thought, reason! When by any superiority of advantage over the other a route is selected the irritation disturbs a more direct tract of molecules in the cord gray, so as to invariably respond to the given stimulus, and a certain set of muscles are moved, then automatism is established, and we have instinct, which is the end, the aim, the death of reason.

The single-celled organism is a wandering nomad, but when several cells cohere, for a common life purpose, the condition is that of a savage mob, until special abilities develop in the separate cells; then the tribal condition arises. If these cells are not properly related to one another, and food is unequally distributed, causing many to perish while the few are surfeited, the animal represents an absolute monarchy. When an advance is made and the needs of the multitude are better supplied, the condition resembles that of a limited monarchy. I maintain (notwithstanding Hæckel's different view), that the republic is typified by a healthy *homo sapiens*—worthy of that specific title, composed of cells, altruistically, though mechanically, grouped into organs, no one of which cells or organs demands or receives more than sufficient to serve the good of all. A diseased state would result otherwise, and if the surplus be among intestinal organs then the government is for politicians and privileged classes.

The ideal man may no more exist than does the ideal republic; but theoretically the brain rules the body in the interests and by the consent of all the bodily units. If a specially favored controlling power arises in such a government and the muscles or the alimentary tract gain control we have the military or the mer-

cantile, the pugnacious or gluttonous dominance. The evolution of nations, societies, species or individuals proceeds over identical paths: The lowest animal is a defenseless absorber of food; a few steps higher in the zoölogical series there is ferocity; higher still, cunning. The human infant passes through the stages of milk imbibing, savagery, barbarism, to more thoughtful manhood. Nations reach civilization by developing industrialism which binds together workers intelligently and considerately. When militancy prevails development is arrested, the country is a lubberly schoolboy with a chip on his shoulder. The wise adult has outgrown his childish greed and bellicosity, no longer lies, steals or wastes time in buffoonery. He thinks. But, to think he must have the apparatus for thinking. Printing, telegraphy and rapid transit bring the individuals of a people into sensible coöperation and the silly sword, gun and clownish uniform finds less favor. The physical basis of intelligence is proclaimed by two facts:

1. The nervous system relates the body cells together in the interests of all the cells of the body.
2. The brain relates the nervous system more complexly to the same end.

A direct ethical inference is, then, that charity, forgiveness, considerateness, justice, etc., are expediency outgrowths and that humanity is but a form of wisdom. I would like to take my readers over the studies I have found so fascinating: Embryology, neurology and other branches of biology; but must resist the temptation to ramble over this naturalists' paradise and keep within the hedgerows of our text. We have not the time to follow out the development of the nerves that ascend the spinal cord to the head, the passage of touch nerves into those for special sense with end organs such as the eye, ear and nose; the accumulation of "commissures" or connecting strands of nerves in the brain. You will find those matters fairly treated by Wundt, Spencer, Bain and the modern physiologists generally.

Elongated, headless animals, through locomotion becoming easiest with one end first, gave rise to animals with heads, as the eel, because the head end encountering soonest the changes in the environment, differentiation would be most likely to pro-

ceed at the head. The special senses grouped themselves here instead of being scattered as they are in lower forms of life. Motions becoming oftenest regulated from the head a longitudinal series of nerves sprang up which afterwards became the lateral nerve columns of the cord, these relate the other segments of the body with the special sense organs and by enabling the body to be controlled mainly through higher differentiated senses a decided advance is made in the organism evolution.

The highest animals have the most complex nervous systems; doubt, hesitation, thought or reason, essentially the same process, exercise nerve centers that are more nearly the protoplasmic state, such as the neuroglia; greater heat is evolved, more blood is consumed and the effort is attended by consciousness.¹⁰ The spinal cord gray matter undergoes this vibratory transfer and so animals without heads may think, but when the tracts are built up so as to make the motions instinctive, such as tossing off a fly from the hand, consciousness need not be involved; the automatic apparatus works reflexly, with less friction, less heat, less blood consumption, and with but feeble sensation evolution.

In learning to play upon the piano the higher senses, with touch, are brought into use; the routes through the brain and cord to correlate the finger movements are being established with difficulty. When the piece is learned it may be played in the dark with but the finger touch sense to guide. A revolution has been effected in the arrangement of the nerve strands in the brain and adjustment of muscles in the arm and fingers has also occurred. Reason was involved at the outset. Instinct was the outcome, and where certain invariable causes produce in any animal invariable effects, brain shapes may be thus built up and transmitted to progeny; inherited; and as soon as the structural form of brain is developed the animal will do what its mechanism has been constructed to do, the chicken will peck as soon as it escapes from its shell. Dispositions and traits are thus transmitted with the "intuitions," superstitions, dexterities and stupidities.

We do and think what our molecular make-up permits us to do

¹⁰ Prof. Herzen, *Journal of Mental Science*, London, April, 1884: "The intensity of consciousness is in direct ratio to the intensity of functional disintegration."

and think, and that make-up is the product of our environment.

Assume that the nerves all over the body are in a state of chemical agitation represented by 100,000,000 vibrations per second, 10^7 becomes the normal for nerve activity, departures from which constitute sensation. Lowering of this normal produces numbness, irregularity, pain. If from 50 to 1,400 interruptions occur the feeling of touch is experienced; 45 to 40,000 constitute hearing; much more rapid interferences induce sight sensations. Most of these impressions produce quivers diffused through the gray neuroglia of the cord and brain, but when recurrences arrange the minute molecules of that sensitive gray substance into little lines, paths, tracts, fibrils, fasciculi, plexuses, memory is evoked; the impression is recorded, and each such impression produces in the brain a corresponding alteration constant for the same cause.

In the back part of the brain, where sight impressions are recorded, a peculiar eight-layered arrangement of cells and fibrils is found; where hearing memories are stored up, at the side of the brain, other distributions occur. I am, for brevity sake, reduced to the necessity of using coarse similes where precise details can be given, and experience all the disgust of the engineer who is obliged to forego technicalities and explain that his complicated machine acts by the piston pushing certain rods and wheels, when dozens of delicate principles must be unmentioned.

These stored-up recorded impressions are more complexly united through nerve tracts that grow more and more intricate as intelligence increases.

Roughly, then, suppose all the gas and water pipes, sewers, mains, conduits or other things in a city, that permit water to flow through them, were connected. A constant pressure of water constantly trickling through the smaller tubes and rushing along the larger would represent the normal nerve flow. Interruptions in different degrees and for different lengths of time may be likened to what occurs when a touch, sound, sight, taste or smell is experienced. If there occur impediments en route, and at first it is uncertain which route the water will take, there is hesitation, which is reason, doubt, thought. The facile passage of the current is instinct, the route overcome.

Dropping the comparison, a thought works in the brain slowly or swiftly by a succession of molecular oscillations, and taking a brain region as a cube with one side divided into areas figured from 1 to 100, another side lettered from A to Z, the remaining side similarly lettered a to z, then one thought would be expressed by the flashing of atoms along the irregular route 7, L, n, 75, and another R. 19, K. x., and so on. Microscopical anatomists have mapped out hundreds of thousands of these routes. The orderly mechanism of the brain is being revealed, its laws are being unfolded patiently, toilsomely, quietly, by skillful, learned students, most of whom are steeped in bitter poverty; who seek no notoriety, receive no assistance, whose writings are read by the appreciative few; their contributions swell the sum of human knowledge, and with knowing that the world is better off for their having lived they must be satisfied, as sole recompense.

As the pseudo-sciences alchemy and astrology gave rise to chemistry and astronomy, so phrenology has been succeeded by craniology and cerebrology. Races are now known to have head shapes peculiar to themselves; but only in a general way does the skull conformation indicate mentality. Oliver Wendell Holmes says: "You can tell by bumps what is in a man's head as readily as what is in a safe by feeling its door knob."

Most of the phrenological deductions are illogical and many are controverted by facts. For instance, "vitativeness," or the desire to live, is located by phrenology over the mastoid process, behind the ear; a huge bump of bone into which a lancet is often deeply thrust by surgeons without fear of touching the brain. The "perceptives"—form, size, color, weight appreciation, are placed along the eyebrow ridge, though the brain is very remote from that part, and primitive races, or even apes, have the largest development of that arch.

Gall observed that the best scholars had protuberant eyes, so he located "language" behind the optic, an absurd proceeding, for the widely opened eye is an expression of wonder, the exercise of which faculty has led to erudition in general. In Gall's time linguistics were the height of knowledge, hence his conclusions. Constructiveness and combativeness belong to a high grade of intellect, and while we can deny that they have the exact locations

assigned by phrenologists it is not remarkable that the increased brain size that accompanies brain exercise should widen the head in the region assigned to these bumps. Reasoning power and pertinacity could more properly be thus placed, but as the frontal brain develops and broadens the forehead the skull does not always keep pace with this growth, so that one with a narrow or even low forehead may have a large brain compressed into narrower compass. Per contra, the disease called hydrocephalus may give the idiot the "front of Jove." There is a tendency of the cranium to adapt itself to brain growth, but the rigid bones require centuries to establish radical changes; the softer tissues beneath folding up in lines of least resistance. It can be readily seen from this how head shape could be a race characteristic, but give no clue to individual traits, save in the crudest ways.

Says Prof. Gunning:¹¹ "In the Museum of the Smithsonian Institution may be seen a cranium of enormous size and most perfect symmetry. Such a noble forehead! and balanced against this such a perfect backhead! All the lines and curves so strong, so graceful!

"The owner of the head was a miserable Indian who never got from it so much as a beaver trap!"

The new phrenology is deduced from the study of the brain itself and brings into that study mathematics, physics, chemistry and other sciences where the old phrenology was isolated in this respect, often defiant of exact knowledge. O. S. Fowler used to say to his audiences "Newton's Principia is all bosh. It is not gravitation that holds the planets in space; I have discovered that it is electricity." The new phrenology is cultivated by learned, modest men, who never give character charts.

The incidental mention of relative and absolute brain weights and sizes of the sexes, by an author in the *Popular Science Monthly* (April, 1887), brought out a rather peppery reply and a rejoinder in succeeding numbers. Correlative articles made a timely appearance in the July issue.

Time-honored post-mortem statistics were cited and sneered at, but the very evident fact was maintained that the average female brain weight was less than that of the male.

¹¹ Life History of Our Planet, p. 289.

The main points brought out are as follows:

The brain of the child is larger in proportion to its body than is that of the adult, but immaturity should prevent too many studies being undertaken in youth.

The men and women who have made the most of themselves are those who have begun to study hard after they have reached adult life.

The skull of the human male is of greater capacity than that of the female, and civilization increases the difference. The average male brain weighs a little over forty-nine ounces, the female a little over forty-four ounces, or about five ounces less. The proportion being 100:90.

Relatively to the weight of the body the difference is in favor of women. The body of the female is shorter and weighs less than that of the male. Thus in man the weight of the brain to that of the body average as 1:36.50, while in women it is as 1:36.46, a difference of .04 in her favor.

A large brain may have its gray cortical substance thinner than a smaller brain.

In man the frontal lobe, separated from the posterior portion by the "fissure of Rolando," affords 43.9 per cent. of the total brain length in the male, 31.3 per cent. in the female.

The specific gravity is greater in male than female brains, but this increases in insanity and old age in both sexes. Dr. Hammond makes a fair allusion to the mental differences of the sexes, based upon the foregoing, but his critic construes his remarks into implying female incapacity and inferiority. She quotes Topinard to the effect that "the brain increases with the use we make of it."

Dr. Hammond defends his position by asserting that the mental differences of the sexes are due to women not having availed themselves of the advantages offered them by civilization. He does not deny that there are some female brains of superior weight and that some women have excelled, mentally, but as a rule he holds that women are logically defective.

Romanes alleges for women a comparative absence of originality, particularly in the higher levels of intellectual work, but there is no disparity in powers of acquisition after adolescence;

young girls being more acquisitive than boys of the same age. After development the male has the greater power of amassing knowledge. Woman's information is less wide and deep and thorough than that of a man. In musical execution he concedes equality. The female lacks judgment and impartiality, but is more refined in her sense faculties, her perceptions are more rapid, thoughts swifter, but superficial. Her will control is less, her temper is unstable and emotions shallow. Coyness, caprice, vanity, love of display and admiration for pageants, society and even "scenes," characterize her. Romanes concurs with Lecky: "In the courage of endurance females are superior, but their passive courage is not so much fortitude which bears and defies, as resignation which bears and bends. They rarely love truth, though they adore what they call 'the truth,' or opinions derived from others, and hate vehemently those who differ from them. Their thinking is a mode of feeling, they are generous but not in opinion. They persuade rather than convince and value belief as a source of consolation rather than as a faithful expression of the reality of things."

Romanes attributes all this to their not having enjoyed the same educational advantages as men, and accords women pre-eminence in affection, sympathy, devotion, self-denial, modesty, long-suffering, reverence, religious feeling and morality. Feminine taste is good in small matters but untrustworthy where intellectual judgment is required. He attributes much to the coarser nature of man suppressing female chances for equality, and holds that the coyness, caprice and allied weaknesses and petty deceits are acquired and inherited self-defense traits, intensified by natural and sexual selection.

We have room only to indicate some important matters that were wholly neglected or but merely hinted at by the writers.

The processes of development known as embryology alone settle the matter of sex differentiation, and proclaim woman to be a very highly organized being—exquisitely adjusted to an important life relation, that dominates her intellectually as well as physically, affording her the advantage of mental refinements and the disadvantage of physical inferiority. In the offspring there is a fusion of advantageous traits that at first belong to both

sexes unequally; acquired beauties of form or character that sexual selection perpetuates and perfects. The mental and physical superiority of the average male needs the amiable governance of the female disposition. This is most apparent in mining countries where males preponderate and unconsciously grow coarse in their manners and ways of thinking.

The microscope has transferred the conception of degrees of intelligence from gross to finer morphology. Mere brain weight counts for nothing, except for the crudest generalizations. Of more consequence are the relative quantities of white and gray matter in brains, the associating nerve bundles, that pass in showers of minute telegraph lines between brain parts, and of equal, if not transcendent, importance, the disposition and development of the blood vessels. Also given two brains exactly alike a difference in the heart's ability to supply blood to the brain will determine stupidity in one and intellect in the other. Intelligence depends more upon the quantitative relating fibers of parts of the brain than upon weights, and a forty-ounce brain may have a more intricate microscopic development than one that weighs fifty ounces.

The normal brain exists in ratios related to muscular development and the brain-weighing methods fully demonstrate that woman is the equal of man in this particular; that is, in proportion to physical development there is no difference in the associated brain quantity in the sexes.

New avenues are opening up to women and decades change our views concerning women's capacities. Let there be the fullest chance for her development. She cannot surpass in certain matters, but let opportunity and not a priori prejudice settle what she can and cannot do. It is idle to fear that she will become the intellectual and physical monster of Bulwer's *Coming Race*. There are physiological reasons that set limits for both sexes.

The Neanderthal skull was found in a cavern near Düsseldorf in 1856 in a diluvial stratum associated with a human skeleton and bones of extinct species of animals. The skull presents striking peculiarities; it has no forehead, but the eyebrow ridges are excessively developed, the bones are thick and heavy, the shape elliptical, sutures nearly all consolidated and the occipital

region is very protuberant; it is dolicocephalic, the capacity being 1220 c.c. A skull from Engis, Belgium, was somewhat similar, and Prof. Moorehead, of Ohio, reports having found many similar crania in the tombs of the mound builders. The jaw of La Naulette, of Belgium, was associated with elephant and rhinoceros remains, but many additional corroborative findings merely assign an earlier date to the discoveries mentioned.

Welcker asserts that short men incline more to wide heads and tall men to long heads, which may prove to be the main issues in the much-discussed matter of cephalic length and width of races.

Brain size is no indication of the amount of intellect. The sensory areas of the brain are necessary to intellect. The frontal lobes are necessary to the highest intellect. Broca confirmed this. The more intellectual brain parts act as checks upon the propensities. Shuttleworth examined 500 idiot brains and 500 of children in a normal school, and found no apparent difference in size. A poorly developed part of the brain may cause loss of intellect. Attempts to localize insanities such as melancholia and mania in the brain are absurd. Many brain physiologists lack knowledge of physics and chemistry, and often mistake conditions for materials and fancy that light, heat, electricity and sound, are things instead of modes of motion.

Cuvier's brain weighed sixty-four ounces, Gambetta's only thirty-nine ounces. Spitzka claimed that Cuvier's weight represented healed up hydrocephalus and not intellect. Cuvier's treatment of Lamarck indicated that he lacked the higher sentiments. Thirty years averages the attainment of the full insight and size of the human brain. Topinard quotes Colin that the mouse has more brain than man in proportion to his body, and thirteen times more than the horse and eleven times more than the elephant.

In the chapter on language there is mention of the speech center in the right-handed person being on the left side of the brain and of its being a part of the symbolic field concerned in movements of the hand and face, so that writing with the right hand has a close association with the ability to speak in adjoining parts of the brain.

Herbert Spencer¹² states: "While the rudimentary nervous

¹² Synthetic Philosophy.

system consisting of a few threads and minute centers is very much scattered, its increase of relative size and increase of complexity go hand in hand with increased concentration and increased multiplicity and variety of connections. Gray matter contains five times as many capillaries as white, based on cubed averages from Kölliker's plates, and from this he infers greater composition and decomposition in gray areas. The conditions essential to nervous action are continuity of nerve substance, absence of much pressure, heat within certain limits, suitable quantity and quality of blood supply, waste must be fully met by repair, nerves are capable of exhaustion, and they require an appreciable time to convey impressions, every part of the nervous system is every instant traversed by waves of molecular change—here strong and there induced by the primary waves now arising in this place and now in that, and each nervous act helps to excite the general vital processes while it achieves some particular vital process. The recognition of this fact discloses a much closer kinship between the functions of the nervous system and organic functions at large than appears on the surface. Though unlike the pulses of the blood in many respects, the pulses of molecular motion are like them in being perpetually generated and diffused throughout the body, and they are also like them in this, that the centrifugal waves are comparatively strong while the centripetal waves are comparatively feeble. To which analogies must be added that the performance of its office by every part of the body, down even to the smallest, just as much depends on the local gushes of nervous energy as it depends on the local gushes of the blood.

Spencer¹³ defines growth as increase in size and development as increase in structure, hence the one does not imply the other always, the finer construction of an educated brain may occupy less space than a similar organ in the hydrocephalic idiot.

In ants the head ganglia are very large, and in the Hymenoptera larger than in the less intelligent, as in the case of beetles.

A factor in brain evolution was in the change of a four-handed animal using all such members also as feet into a two-

¹³ Ibid.

handed animal, causing the forward hands, and of course the brain part regulating them, to be more highly specialized, for more complexity of such a brain part must necessarily follow.

Dr. Hancock, of Chicago, suggested to me that the absence of convolutions in the bird's brain could be owing to the absence of pressure of the cranium, which in turn is due to the abundance of room for growth of both skull and brain in the egg.

The brain of the cockroach is less specialized. This insect is one of the very oldest and retains its ancient nerve centers, but the locust's brain is highly developed.¹⁴ The ants and bees have the highest insect brains, as shown by Dujardin, Diet and Flagel. These brains of the social insects, ants and bees, are more complicated than other winged insects with greater complexity of the folds of the folded disc-like bodies capping the double stalk of other organs.

The shark's medulla oblongata is often the largest part of the brain, but in bony fishes it becomes smaller. In the sharks when the medulla is large there are swellings analogous to intervertebral ganglia on the roots of the vagi nerves on the sides of the fourth ventricle. Food proclivities predominate in the sharks and the teleosts are not so voracious, owing to a development of higher faculties so that function and structure are associated in this respect. The lower grades of fishes rush straight toward their food without hesitation, while the higher grade hang back and inspect the food from a distance, exhibiting the results of higher brain development, causing them to adopt the wisest and safest course. The shark is greedy and uses the brute force of intelligence; other fishes are more cautious and inclined to strategy. And a measure of what vulgarly passes for bravery may be made in the recklessness of the shark and other fishes of low intelligence as compared with the actions of other animals who exercise caution.

A rudimentary part of the brain known as the pineal body or gland is larger before than after birth, and in some lizards has been found to exist as an eye on top of their heads, the eye structure being plainly visible under the microscope. This loss

¹⁴ Am. Nat., Apr. and May, 1881, A. S. Packard, Jr.

of the third eye is no more remarkable than the conversion of the swimming bladders of fishes into lungs or the gills into thyroids, or that a long intestine should shrink into the troublesome vermiform appendix of man.

The pons develops with increase of the cerebellar hemispheres.¹⁵ The optic lobe predominates in fishes and birds. The cerebrum appears to be a secondary projection from other lobes. The attempts to preserve a better balance in the erect position and to coördinate other movements is the great factor in creation of fibrils in the central nervous system. The destruction of these fibrils will interfere with correct movements. Cell processes are less rich the lower the animal.¹⁶

Waldeyer in 1891 announced a theory of neurons, essentially that nerves were projected from the nerve cells,¹⁷ and Schafer amplified the subject,¹⁸ but by reference to my *Comparative Physiology and Psychology*, p. 157, 1883, it will be seen that I antedated Waldeyer by ten years in a lecture in 1881. As an addition to the explanation I said that the neuron theory is not strictly a rule for nerves may be laid down in tissues before the nerve cell appears, I would further suggest that when forces travel in definite directions the granules become encapsulated and form cells and nerve coverings, so when there is diffusion of impulses the nerve granules remain uncovered, but when directions are definite then the nerve cell appears and develops the nerve strands from it as a center.

Mind includes every life activity for what corresponds to the sympathetic nervous system of man regulating his unconscious physiological processes is the mental apparatus of the invertebrates.

The mental mechanism and workings are best understood in their simplest aspects. A boy could not master a Corliss engine till the main principles are understood and these are best learned in the simplest engines.

¹⁵ Gegenbaur, p. 510.

¹⁶ Spitzka, *Journal Nervous and Mental Dis.*, Oct., 1879, p. 629.

¹⁷ *Deutsche Med. Woch. Ueber Einige neue Forschungen im Gebeite der Anatomie d. Centralnervuen systems.*

¹⁸ *Brain*, p. 134, 1893.

In my previous work, referred to,¹⁹ I suggest that the brain lobes have been formed by development of simpler ganglia, such as the swellings on the sensory nerves near the spinal cord, known as intervertebral ganglia, and that the stoppage or diversion of impulses is a function of these bodies, which are large on the acoustic nerves of fishes, probably to blunt sounds of no use to the fish. The cerebellum being composed of these blunting ganglia, excision therefore does not cause noticeable results.

The foremost portion of the brain, called the prefrontal lobes, are, according to Dana,²⁰ and other specialists in nervous diseases, concerned in volition and the power of self-control, concentration of thought and attention (Ferrier). They form a high association centre. Injuries of this part of the brain produce changes of character, indicated by irritability, mental enfeeblement, lack of power to concentrate the mind or to control the acts or emotions. A case is reported²¹ of prefrontal brain tumor with loss of memory of recent events, emotionalism, loss of decency, shame and propriety. He grew sleepy, dull, apathetic, lost all attention for any length of time, and his lack of judgment was remarked. Slight paralysis of lower right face, and recovery on removal of a tumor from the left prefrontal tip of lobe. A boy named R. S. King, in 1880, injured the front of his forehead, exposing a triangular part of the brain, the side was not recorded, and some one cut off the protruding piece of brain, after which the boy became ungovernable, developed a reckless disposition, and was drowned while swimming.

The forehead of the well-known Laura Bridgman grew larger as her education progressed.

The importance of the frontal lobe in mental states is conceded by all writers on the brain.²²

Dr. Alex. Hedlicka²³ says that white children present more diversity, negro children more uniformity of physical characteristics which increases as time passes. In the black the forehead

¹⁹ Comp. P. and P., p. 180.

²⁰ Diseases of the Nervous System, p. 372.

²¹ Lancet, Feb. 8, 1902, p. 363.

²² Gowers, Diseases of the Brain, p. 178.

²³ Am. Anthropologist, Nov., 1898.

is narrower, the face more prognathic, the malar bones are larger, the nose is shorter, the lips more prominent, the mouth is broader, the teeth are stronger, the dentition is more regular, the uvula is shorter and stouter, the lower jaw is higher and stronger; the colored girl before puberty resembles the boy more than the white girl does.

Skulls of Europeans have increased in size since historic times, and civilization has raised the anterior and flattened the occipital parts of the skull, according to Abbé Frère, of the Anthropological Museum of Paris.

Broca further shows that cultivation of the mind and intellectual work augments the size of the brain and this increase chiefly affects the anterior lobes. Parchappe found the frontal lobe in men of learning larger than in common working men.

The frontal lobes are centres of inhibition. When impulses cease to be controlled by mentality the passions reign unbridled.

As what one does must alter his brain shape, it can be conceived that a musician would have a special development of brain and his reasoning centers in the forehead would be connected strands concerned in music, such as his hearing center being large and associated with his optic recognition of musical notes with his artistic brain records. The mechanic would have hand centers developed more in the brain, an editor would have special growth of the writing center, connected with his pen hand.

A large lower jaw or mastiff mouth denotes resolution, determination, and belongs to heads that have made a noise in the world, showing that while originally a large jaw and its associated muscles could have been best adapted to fierce carnivorous habits, it does not denote mere brutality in a man, for it can be subordinated by a large brain. The relations of the brain as a regulator of the viscera might suggest that rapacity and want of consideration for others could be associated with special development of centers for intestines in the brain, but a more important factor would be the faulty intellect, either in memory, association, imagination, or defective inhibitory or higher reasoning powers, which leaves the original animal rapacity merely changed as to the kinds of things grabbed for, the intestinal centres

being those for acquisitiveness primarily, and later civilization, merely facilitating means for the ultimate ingestion.

Joseph Jastrow²⁴ sums up the difficulties and advantages of the comparative method, dwelling upon many of the lower animals being more fully developed at birth. "With such creatures as the cod fish, the turtle, or fly catcher, there is nothing that can be called infancy." (Fiske.) He refers to Spalding's observation of chickens who from the shell follow the movements of flies and accurately pick at them. Man, Jastrow notes, attains his high intellectual position by entering the world the most helpless of living kind, but because less freighted with the ingrained habits of his ancestors, is he freer to develop habits of his own. "It is babyhood that has made man what he is." (Fiske.) Motherly devotion and affection, fatherly interest and supervision, extend over a larger and longer period as the species is more and more highly developed, until among the highest races of man it continues in a modified form through life, and in this modified form contributes to the development of the sentiments of kinship, family pride, altruism, and many social virtues. Thus human superiority can be referred to the infant entering life in a much less mature condition than the young of other species.

In Africa, Herbert Spencer observes, the children are absurdly precocious and sharp under puberty, and that period, as with the Hindoos, appearing to muddle their brains, when their ability to receive new ideas appears to be lost. The Sandwich Islanders are quick at learning, but are poor thinkers. The New Zealanders are in the first ten years smarter than English boys, but not afterwards.

Primitive people are more like one another than are individuals of a higher mental type, and there is greater individuality among the educated than the uneducated. This lack of pliability and of independence and prolonged education results in rigidity of customs, thought and habit, and the keeping up of meaningless customs and an unyielding conservatism.

Comparing infant and animal traits he refers to the playfulness of children and kittens. Curiosity, inventiveness, dislike of

²⁴ Popular Science Monthly, Nov., 1892, p. 35.

ridicule, love of being fondled, craving for attention, with jealousy and anger when neglected, the ability to distinguish persons even though the dress is changed, the difference between visitors, beggars and friends of the family. Also the savage and childish peculiarities are often alike. In both the savage and child there is instability of character, impulsiveness, an easy and quick transition from one series of emotions to their opposites, violent passion upon slight provocation, with intense pleasure in trifles, joy in brilliant and startling sense impressions, a narrow range of susceptibilities, with the self-centering emotions of fear, anger, jealousy, vanity prominent.

A child in pain is appeased by candy, its anger forgotten in a new picture book. Attention is attracted by a single object until fatigued. Merriment is similarly savage and childlike. Spencer speaks of the savage having the mind of a man and passions of a child, or exhibiting his adult passions in a childish manner. Both have difficulty in pronouncing certain sounds, inaccuracy of articulation, a skipping of parts of sentences, etc.

"The mind of the savage," says Sir John Lubbock, "like that of the child, is easily fatigued and will then give random answers to spare himself the trouble of thought."

Galton tells of the Damara who never generalizes and who, "knowing a road perfectly from A to B and B to C, would have no idea of a straight cut from A to C; he has no map of the country in his mind, but an infinity of local details." He watched a Damara trying to understand that twice two made four without being able to do so, and at the same time a spaniel trying to make out whether all her six puppies were present. The dog and savage were about alike in ability to count properly.

In the decay of the mind also the law is that the latest, least firm acquisitions are first lost, and the older, more deeply impressed, more primitive memories are longest retained. Gesture language remains when spoken language is diseased or lost.

Again, idiots resemble a continuance of infancy in some respects, a tenacious, mechanical memory at times, they delight in sense impressions, mimicry of noises, cruelty, and the like.

CHAPTER XIII.

THE SENSES AND FEELINGS.

There is nothing in the intellect that has not reached it through the senses (Aristotle), is a saying both time-honored and justified. The functions of sensation are to indicate changes in the environment, to symbolize reality, to stimulate higher activities and prompt the formation of complex conceptions. Sensation may be approximately defined as a resultant of external impressions:

A sensory impression involves a sending in of shocks from the outward organ, such as the eye or ear, to the brain, and a definite adjustment of the conducting paths and receiving apparatus must occur, and in addition some sort of a motor reflex act follows; that is, some muscles are excited to move, though the excitement may be arrested in what is known as inhibition or checking, and in addition every sensation and motion affects the blood distribution, so that sensations are not simple matters in their results. Blood is attracted to the route of the sensation, and when often repeated the sensation will cause a definite action of blood vessels to resupply the waste caused by the action of the center and nerves.

A tree is recorded in the visual part of the brain, not as a picture, but by certain effects upon that part accompanied by blood-vessel action, and in addition to this there is the sensation experienced by the head and eye muscles, movements needed in seeing the tree. A very tall tree would add the effect of the head being thrown backward to see the high branches; therefore, impressions, however apparently simple, are really compound, and engage considerably more than one part of the brain, or even more than one organ of the body. These conjoined records of molecular and molar movement make up the memory.

So several senses, as that of touch, or the muscular sense, can be engaged in a single observation, as the sight itself and the

accompanying feelings of parts of the body moving at the same time, the nerve fibrils and blood vessels associating the centers of activity.

Telegraph wires are traversed by vibrations of constant currents, much as the animal nerves are assumed to be in movement, and the terminal mechanism remains undisturbed by the current, so far as signals are concerned, until interruptions in the passage of the current take place. When the operator breaks or destroys the currents for an instant at one end of the line, this break becomes apparent at the other end in a movement of the relay armature. The nervous system is readjusted constantly, so that what were stimulants at one time may cease to be so later. The miller sleeps in his mill, but awakes when the machinery stops. Light falls regularly upon the eye, but it is the interferences with light that we see; partly deaf persons may hear best in a great noise, because the vibrations imparted by the noise enables changes to be appreciated.

Vision or light has been defined as the color sense, the space sense, and as that ability to become aware of objects without apparent contact.

In the visual perception of space there are degrees of distinctness of retinal images, dim or clear, according to magnitude and distance, the image will be small or large, enabling judgment of distance.

Kepler in 1604 explained the structure of the human eye and traced the causes of imperfect vision in the converging of rays of light before and behind the retina. That is, the lines of vision met too soon or too late to be properly concentrated upon the sensitive part of the eye, through the eyeball being too long or too short. Kepler's laws of the planetary movements place him far in advance of all previous astronomers.

The notion that birds have dull senses and that sight is their main sense appears to be a mistake, as their hearing is acute and they can smell as well as dogs.¹ Men differ among themselves as to acuteness of sight, out-door occupation sharpening this ability. The Tartars are said to be remarkably keen in eyesight.

The pigment spots in worms are rudimentary eyes. Light

¹ M. X. Raspail, *Smithsonian Reports*, 1897, p. 367.

brought about the primitive irritability from which sight was developed. By degrees of bleaching of the pigment of the retina we estimate colors, between red and violet the rapidity of light vibrations is 392 trillion to 757 trillion vibrations per second. Such physical motions themselves are not sent to the brain, but are translated into nerve vibrations which the brain further comprehends as having come from a special sense organ. All sensation is a motion of particles striking the protoplasm or cell and accessory organs adapted to such purpose, as terminal rods, hairs, etc., in insects and other animals. Sensations impress us by their different velocities, modified in their transmission to the brain, and an excellent demonstration of this appears in the softness of the auditory and hardness of the optic nerves, hearing being concerned with coarse movements, and sight with extremely fine ones.

The wave lengths passing over the optic nerve are interrupted by acts of vision; for instance, when the sunlight is obstructed by an intervening object the colorless impression may be made upon the retina, but when colors are seen a chemical substance called rhodopsin bleaches in the order of yellowish-green to red.² According to Boll, light perpetually destroys the retinal color and darkness regenerates it. Thus in the space of a wink regeneration occurs, and the constant voluntary and involuntary movement of the eyeball enables a large number of the rods and cones of the retina to be engaged, affording time for regeneration of such as are not being used at the instant. The color blind are

In the *Journal of the Royal Microscopical Society*, V. iii, No. 1, p. 63, from *Arch. Mikr. Anatomie*, xvii, p. 58, 1879, is a diagram of a visual and another of an acoustic segment compared. The eye and ear of the highest animal is here divested of all such accessory appendages as cornea, iris and crystalline lens, pinna, tympanum, ossicles and labyrinth. In each segment the nerve dilates into a nerve cell which is followed by a protoplasmic visual or acoustic cylinder in which are an anterior and a middle nucleus and a rod-like body in direct connection through the ganglionic corpuscle with the nerve. The acoustic cylinder is continued into a nucleated body which though not separated from the cylinder by membrane seems to answer to a cell of the vitreous body of the eye. A visual segment of *Buthus* and acoustic of *Acridian* are represented in the diagrams.

² Gamgee, *Physiological Chemistry of the Animal Body*, p. 465.

defective in these chemical impressions. Where the pigment fails to bleach or changes too rapidly, or too slowly, color aberration would be inevitable. When nutrition is interfered with, as by cutting off the circulation to visual parts, the color appreciation would be lessened, and the necessity for the incessant to and fro movements of the eyeball are obvious in bringing fresh sets of retinal elements to bear upon the object seen. Were the eye held fast, without motion, its visual power would be weakened by over-exercise of one part of the retina.

David Starr Jordan³ observes that "There are certain powers possessed by childhood which grow weak or disappear with advancing age or wisdom, until at last all recollection of them is lost. One of these is the ability to recognize shades of color in ideas or objects which can have no color at all. Now and then some trace of this power persists through life, and even in connection with some degree of maturity of judgment. It is then looked upon as a mild hallucination, provoking a smile of sympathy or of incredulity, but not regarded by the person himself, still less by his friends, as possessing any value or significance. Nevertheless such associations have a degrees of psychological interest. A chapter has been devoted to them in Francis Galton's admirable work,⁴ an interesting essay of Word Color has been very recently published by Prof. Edward Spencer, of Moore's Hill College.⁵

In his youth Prof. Jordan always associated the idea of color with letters of the alphabet. Of later years the discovery that other people recognized no such coloration came to him as a surprise. The letter R, for example, always called up the idea of greenness, S recalled yellow, X scarlet, and so on through the alphabet. Some persons having a similar association do not attach the same colors to the letters. Other persons have had an association of color with sounds. Certain ones claim to play the piano by color, each key note corresponding to a color. Jordan tells of the occasional association of colors with taste. A young girl would say to her mother that this food "tasted so very yellow

³ Popular Science Monthly, July, 1891.

⁴ Inquiries into Human Faculty.

⁵ Proceedings Indiana College Association, 1889.

that I cannot eat it." She was reproached for such eccentric notions and finally outgrew them.

There may be several ways of accounting for such abnormalities: The color appreciation centers in the brain could be erratically connected with the other sense centers that arouse these color impressions, or some cells and fibres that ordinarily respond to color impulses have been misplaced, but the greatest probability is that the child has unconsciously been impressed by certain colors at the time of learning the letters, possibly by a colored primer, by views of lawns, trees, flowers, etc., at the time of struggling with the retention of the symbol, or of the word containing the special letter that recalls the color. Still another view would be that by aberrant action the vibrations induced in the special sense nerve, or its terminal, aroused color-appreciation vibrations in the same terminals. But why should this sensitiveness be confined to mere letters instead of objects in general? The most probable explanation seems in the association accidentally of the letter or word and the color while learning the letters. This law of association is a powerful one, and explains many other matters equally mysterious otherwise. Even to the extent of inability to perform certain ordinary acts unless certain accidentally associated conditions were simultaneously experienced. Pupils have failed to pass examinations on subjects they had learned well because the usual room was not used during the recitation.

H. E. Newell⁶ mentions the instance of a New York physician having two patients with this faculty abnormal. One of them had a horror of all words in which the letters *ch* were placed, and the other had hysterics at a certain shade of blue.

M. d'Abbadie,⁷ on the peculiarities of numerical vision, led to a discussion in which M. Jacques Bertillon related that he connected deliberately and intentionally each number as he was taught with some object in the garden, and thus created an indestructible association of ideas between the figures and plants. Fractions he associated with clock-face divisions, but, of course, restricted to factors of 60.

⁶ The Color of Words, Popular Science Monthly, Dec., 1887, p. 257.

⁷ Proceedings Anthropological Society, Paris, 1886.

Such instances tend to prove that unconscious association through simultaneous impressions, received at the time of learning the letters or numerals, is at the root of such queer matters. Memory is full of such unconscious relations and cause us to remark, "What made me think of that?"

Hearing is a matter of vibrations sent through the air into the ear or striking the hearing organ of the animal, which in the case of the male mosquito is made of hair-like antennæ on his head. Spaces judged by the ear, as well as directions and distances, are apt to be very faulty, as association and inference have to be depended upon and mistakes are frequent. The qualities of sound are pitch or altitude, tone or timbre, volume or amount, loudness. The limits of pitch are the number of vibrations determining the place of a sound in the scale of music. Tone decides between music or noise, a matter of vibration character. Volume is the amplitude of the vibrations. Harmony, discord, resonance, by sympathy and fusion of sensations, with two noises making a silence, and the vast science of sound in general is usually merely touched upon by experimental psychologists and hardly noticed by the old-fashioned essayists on the mind.

The primitive ear consists in a vesicle filled with small mineral particles called otoliths, and supplied with nerve bundles distributed in its walls. The reason for auditory hairs ending in

Experimental psychologists decide upon space and color as the functions of vision. The colors being divided into three primary. The quality comprising intensity, saturation and tonality, the duration being larger than impressions as after-images show, and there being positive and negative after-images. The color perceived is often affected by the particular part of the retina. Color blindness is for red or green.

The strain of accommodation may affect judgment of space and that of convergence is concerned in magnitude and distance, the parallax of motion affords judgment of distance, and perspective that of either distance or solidity, and landscapes are usually clear in the near and smoky or hazy in the far distance, and with binocular parallax distances are also judged. The distribution of light and shade affords judgment of form from experience and the artistic imitation of it produces the same effect. All showing how composite impressions may be, and that many things beside mere simple sensation are associated with every sensory act to enable us to profit by it, such as experience, comparison, muscular movements, blood conditions and operation of other senses at the same time.

water is that they are related to the touch sense in fishes whose tufts of hair enable them to become aware of motions of the water.⁸

It is difficult to determine where one sense ends and another begins in the cases of touch and hearing, in low notes and mechanical vibrations of about thirty per second both senses appreciate the same thing. A deaf person may accurately estimate the rhythm of the low notes of a piano through his touch sense. Sir John Lubbock has demonstrated the ability of lower animals to be affected by vibrations that are too high and too low for man's eyesight and hearing. Man has thus either lost or never possessed faculties which other animals retain or may have developed. Persons differ between themselves in their ranges. Most have an ear only for notes to sixteen thousand vibrations per second, while the possible range is placed at thirty-eight thousand. At the same time, these rapid mechanical motions produce sounds, and these sounds are the lowest bass notes of music, so that at this point we have ordinary motions, that produce visible tremors of the largest piano strings, converted into sound energy. If you strike the highest note on the piano the vibrations belonging to its sound are so fine as not to be seen, so that sound from bass to treble consists in a few vibrations to very many vibrations of the strings per second. The number of vibrations per second necessary to produce the lowest bass sounds heard by man is forty per second; the higher notes may contain as many as 40,000 vibrations per second, the range being only to sixteen thousand in most persons.

Sir John Lubbock⁹ deduced from experiments on bees the inference that they hear the high overtones at or beyond the range of hearing of man.

Weber's law as modified by Fechner states that every sensation has a certain intensity which can be more or less definitely measured in relation to stimulus. Sensation increases in intensity in an arithmetical ratio as the stimulus increases in a geometrical ratio. But the rule is approximate and has its limitations. Mathematics are thus used in psychology in an indirect measurement of sensation.

⁸ Stricker's Histology, Max Schultze, p. 167.

⁹ American Naturalist, April, 1883, p. 449.

The special senses of taste and smell are associated in food discrimination to such an extent as to be often confused one with the other. As might be imagined, the simpler reflex organization of the lower invertebrates relating mouth motions to these senses, grow more complex the higher the animal, until considerable brain tissue is concerned. For example, the infant wants to eat everything it sees, and its arm and mouth reflexes respond to sight, smell, and taste in endeavors at swallowing everything visible, including its fist and the moon. Olfaction is the main food discriminating sense below the primates, the olfactory lobes at the base of many lower mammalian brains being very large.

In 1884 I published the original view that the hippocampus major related the olfactory sense to the eating motions. The hippocampus major passes from the olfactory nerve roots backward and finally curls upward and forward to the post-frontal region, where are centres for the lips, tongue, and deglutitory parts generally. The Huxley-Owen controversy over the hippocampus minor ended in the former demonstrating its presence in anthropoid ape brains. The animus of the denial was to show a radical difference between "lower animals" and man in the absence of a cerebral part.

I am not aware that any one has preceded me in announcing the probable functions of the hippocampi. The major is large and, in keeping with its size, must have subserved some very important life relation, and what is more likely, considering its beginning and termination, its relationship to other brain parts, and its zoölogical distribution, than that it brought the smelling, tasting, and eating apparatus into coöperation.

In man and the higher apes, the olfactory has given way to optic intelligence generally, and in judging of food wholesomeness the eyesight is relied upon mainly, which would account for the obsolescing features of the major in man, and the absence of the minor below the apes.

The minor projects into the occipital lobe in the region allotted to optic intelligence. The relative sizes of the hippocampi may be explained by remembering that millions of years may have been occupied by mammalia with olfaction as the main means of

food discrimination in their evolution, and that relatively much less time has elapsed since the apes and man first appeared. The hippocampus minor develops as the optic sense becomes the superior means of food judgment; and as the olfactory importance diminishes the hippocampus major degenerates.

That the taste and olfactory centres are not definitely determined depends, in my opinion, upon the intimate blending of these senses with motor eating centres, paralysis of which becomes so noticeable as to overshadow the sense loss, which latter may be overlooked or regarded as not necessarily an associated derangement. Lesion of the temporal lobes destroying the smelling sense may indicate no more than that olfactory fibres pass through those parts. Taste has reflex connections of a lower than cerebral nature that regulate many involuntary acts concerned in eating, but by association pretty extensive brain distributions are also concerned, more particularly optic, and the glosso-labial motor areas near the sulcus of Rolando. So we may say that taste and smell are more generalized than centralized through the brain, and that in man the smelling sense is losing importance.

Notwithstanding the large size of the olfactory tract at its junction with the brain, the smelling centre has not satisfactorily been made out. There are many portions of the brain the functions of which have not been discovered because present methods of observation are insufficient. There are certain phenomena that follow upon injury of other portions, such as loss of sensation, elevation of bodily temperature, in coördination, vertigo, but as any one of these kinds of disturbances may be produced by injury to several different areas, strictly speaking we cannot regard such pathological processes as indicating physiological centralization.

With smell, taste and sight direct stimulation is impossible. Stimuli are modified before being sent in. The organs transform the stimulus, probably chemically. In smell and taste we have external chemical agencies, in sight we have light as the cause of chemical disintegration in the sensory cells; these processes in the cells, then, serve as the real stimuli. Taste, smell and sight are chemical senses, while touch, pressure and sound are mechanical. Different stimuli acting on the same end organ produced the same sensations. Thus mechanical and electrical stimulations of the

eye produce light sensations. Differences in qualities of sensations are due to differences in processes in stimulations that arise in the sense organs, primarily in the character of the physical stimuli, and secondarily in the peculiarities of the receiving organs which are due to its adaptation to the stimuli.

Democritus observed that pressure upon the nostrils interfered with his sense of smell; when one has caught a cold the swelling of the membranes exerts this same pressure, and also cuts off the smelling ability. Smell depends upon odorous substances striking the membranes of the nostrils, these odors having regular orbital rotations constant for each substance. What passes for the sense of taste is very largely in part or in whole the smelling sense; all the fine differences by which we distinguish the various wines, fruits and meats, depend mainly upon olfaction. Smell is developed more in dark races, also in ruminants, carnivora and the wild boar. It is of poor service to human beings, except as an aid to the sense of taste. The faculty differs greatly between persons, some children have been able to identify people by smell.

Taste stimulates the taste buds of the tongue through solution and chemical disruptions, rotations and impacts, though both touch and smelling senses are at times confused with tasting acts. Cold and heat impair the tasting ability. Taste appears to engage rapid contacts in a watery medium, and smell acts by allied rotation of particles striking the nose membranes. Taste is divided into primary qualities of sour, sweet, bitter and salty; alkalinity is related to salty and metallic with sour; the alkaline is probably made up of salines, and sweet with metallic and saline. Sweet salines neutralize, and cause insipidity. Taste is thought to be antecedent to sight, from its apparent presence in low organisms in which vision has not developed.

A muscular sense has been suggested for some reasons, and denied by most physiologists as merely a form of the ordinary touch sense. Even admitting its existence, its nature is still obscure, owing to the confusion of sensations accompanying muscular action with the notion of ordinary sensation, and the ambiguity of the terms consciousness of motion and motor consciousness, sometimes confused with the consciousness "initiating" mus-

cular action; so sensation, motion and consciousness are confused in talking of muscular sense. The facts to explain the matter lie in active movement, the consciousness of effort and great discriminative ability. The theories consist in that of touch, the epiperipheral; that of muscle pressure upon nerves, the ento-peripheral; and the theory of effort-feeling, the central motor theory.

According to Wundt, the "general sense" precedes all others and belongs to all beings endowed with mind. It includes not only the external skin and the adjoining areas of the mucous membrane, but a large number of internal organs supplied with sensory nerves, such as the joints, muscles, tendons, bones, etc. The general sense includes four specific, distinct sensational systems: sensations of pressure, heat, cold and pain. There may be mixtures of these by one stimulus, as heat and pain, or pressure and pain. The four systems are homogeneous. Pressure sensations from the skin, joints, etc., are grouped as touch sensations, and are distinguished from the common sensations, which include sensations of heat, cold and pain, and those sensations of pressure that sometimes arise in the other internal organs. This relates to ideas and feelings, and not to qualities of sensations themselves. Heat, cold and pressure internally are only exceptionally felt under abnormal conditions. On the other hand, all parts of the skin and mucous surface adjoining are sensitive to stimulation of pressure, heat, cold and pain. The degree may vary so that the same place is not alike for all sensations. Sensitiveness to pain is about the same everywhere, at the surface or just beneath. But certain points of the skin appear to most favor stimulation for heat, cold and pressure; these are pressure spots, heat spots and cold spots; spots of different modes do not coincide. Still, temperature spots always receive sensations of pressure and pain as well, and a pointed hot stimulus applied to a cold spot always causes a sensation of heat, while hot spots and cold spots react with their adequate sensation to properly applied mechanical and electrical stimuli. Pressure and pain are not relative to each other or to the two temperature sensations. These heat and cold sensations are not only different but contrasted. Pressure and heat, pressure and pain, cold and pain, may exist as mixed sensations; hot and cold exclude each other because the

only possibilities for a given area of skin are a sensation of heat, or one of cold, or an absence of both. As no end organ has been discovered in the skin for the determination of heat and cold sensations, it is quite likely that the blood or the blood vessels are the conveyors of the sense of heat and cold. An interesting question is, Why does extreme cold give the sensation of heat, as in handling liquid air, and why does the feeling of heat come to the person who is freezing to death? Heat is induced by an arrest of motion. After running we experience the heat sensation. Extra activity of the circulation gives a feeling of heat, and a fever is accompanied with a rapid pulse. An ability to appreciate degrees of heat would be important to animals generally, fishes would be enabled to judge of localities such as the gulf stream, and the reptiles of the far-off ages in the hot seas did not need internal heat generation and must have been made uncomfortable by the ice-cold polar or glacier waters. Heat feeling must have been a very early sense, and connected with visceral reflexes, so that the sympathetic nervous system would be more involved in modifying conditions of organs through heat reflexes than the cerebro-spinal nerves. All parts of the body may appear involved in fever recognition, but how is a hot point on the surface made known? Is it through the vessels, the blood or the nerves?

The Touch Sense is the most general, the most rudimentary and the earliest to appear in the scale of life. When all other special sense faculty is lost, the touch, or tactile, sense may remain and be the only link between the brain and the outer world as a means of education. There are nerves to convey the sense of touch, pain and to enable us to feel heat and cold. From the fact that these sensations are so very relative, cold being merely the absence of heat and heat being the absence of cold, and what is cold at one instant may be hot at another, and our appreciation of either heat or cold being so dependent upon external or internal influences, it seems surprising that one set of nerves would not be enough to carry inward both sensations. A physicist would be likely to jump to the conclusion that one set of nerves would suffice, but our theories often are jarred by newly discovered facts. The surface of the body is abundantly supplied with little bulbs which are concerned in receiving contacts to send nervous im-

pulses inward to the brain. But these end organs are unequally scattered about the person, for in places, such as the back, a pair of carpenter's compasses gives the sensation of only one point pricking the skin, when two points may be doing so several inches apart, while on the tip of the tongue or end of the fingers these sharp points may be felt as two separate pricks, even though a small fraction of an inch apart. It is the same with the heat, cold and pain senses, for some parts of the body are acutely sensitive to such feelings, while other portions are dulled to them.

Democritus claimed that all the senses were modifications of the sense of touch, and modern science upholds this view, as it appears biologically the touch sense was the first to be developed, and the other senses proceeded from it by evolutionary refinement of outer-end organs.

In the lowest forms of life, where there is no nervous system, every movement of the animal parts, however coarse or fine these parts or movements may be, practically constitutes sensation in the animal, and this connection between mind and body, the mental and physical life, exists much more in the highest animal life than is sufficiently recognized. The various forces of nature which may affect living things, as well as things which do not live, may be arranged in serial manner. Visible ripples in the water up to the great waves of the ocean, with every sort of motion greater than these, include mechanical force or energy, and ripples or movements of any substance down to thirty, forty, fifty, or a few more movements per second, could also be included among mechanical motions, force or energy. Now, while with the ear we may appreciate forty movements per second and forty thousand movements per second, with the touch sense impressions made slowly, one to forty per second, distinct and separate feelings are caused, but with more rapid impressions there is a mere sensation of roughness, as in passing the hand over velvet or the fine down of a peach. If the contacts are more numerous than 1,400 per second the sense of roughness disappears and a smooth sensation is felt.

Pressure may be felt on skin not supplied with nerves and sound vibrations may be transferred to the auditory nerve even after the auditory organ is removed.

To some degree the touch sense may compensate the loss of sight in the blind, and hearing may also do so, but Galton thinks this is greatly overrated. There are special organs in the regions of the body most sensitive to pressure, but their structure renders it probable that they merely favor the mechanical transfer of the stimulus to the nerve endings. Special end organs for hot, cold and pain stimuli have not been found at all. Space perceptions through the touch sense consist in those of pressure or resistance, and those of motion or movement. The perception of direction is by localization of points touched and by discrimination with experience as guide. The tactile hair sense of man is separate from the general touch sense. Considering the remarkable sensitiveness of some plants to contacts, the fly-catching carnivorous plants, and other seeming analogies between the animal and plant life, an added significance is given to the following words of Darwin, with which he closes his memorable work: "We believe that there is no structure in plants more wonderful, as far as its functions are concerned, than the tip of the radicle. If the tip be lightly pressed, or burnt or cut, it transmits an influence to the upper adjoining part, causing it to bend away from the affected side; and, what is more surprising, the tip can distinguish between a slightly harder and softer object, by which it is simultaneously pressed on opposite sides. If, however, the radicle is pressed by a similar object a little above the tip, the pressed part does not transmit any influence to the more distant parts, but bends abruptly toward the object. If the tip perceives the air to be moister on one side than on the other, it likewise transmits an influence to the upper adjoining part, which bends toward the source of moisture. When the tip is excited by light * * * the adjoining part bends from the light; but when excited by gravitation, the same part bends toward the center of gravity. In almost every case we can clearly perceive the final purpose or advantage of the several movements. Two, or perhaps more, of the exciting causes often act simultaneously on the tip, and the one conquers the other, no doubt in accordance with its importance for the life of the plant. The course pursued by the radicle in penetrating the ground must be determined by the tip; hence it has acquired such diverse kinds of sensitiveness. It is hardly

an exaggeration to say, that the tip of the radicle thus endowed, and having the power of directing the movements of the adjoining parts, acts like the brain of one of the lower animals; the brain being seated within the anterior end of the body, receiving impressions from the sense organs, and directing the several movements.¹⁰

In discussing the Feelings, C. L. Herrick¹¹ suggests that changes in blood pressure may occur which now produce no direct sensations, but which operate indirectly on the reflexes associated with emotions. That is that instead of a localizable sensation the stimulus finds its way to our consciousness in a form which we term pleasure or pain, anger or fear. Even the reproduction of a painful event may cause a variety of delicate and indescribable thrills with waves of contraction passing through various regions of the trunk and limbs. The impulse to hug, squeeze and press objects associated with tinglings and strong jaw contraction which Prof. Herrick mentions is explicable very likely by Darwin's law of serviceable associated habit, in the formerly useful clutching and carrying off movements being refined by civilization. The early localization of the affections in the bowels, he says, is founded on good physiological observations. He refers to Tuke's remark that by acting chiefly on the flexor muscles, fear causes the general bending or curving of the frame, as the hedgehog does, while courage contracts the extensors and produces expansion and height. The opposite state of relaxation occurs in terror. Calmness is marked by a gentle contraction of the muscles. indicative of repose, but at the same time of latent

R. Wagner was the first to broach the supposition that the pale fibres in the Pacinian bodies and in the electric organs were sheaths with axis cylinders, and that the processes which pass into nerve fibres were themselves bare axis cylinders, and, moreover, that the entire granular contents of a nerve cell are nothing but an axis cylinder enlarged into a globular form. A. Kölliker, ed. by J. DaCosta, 1854, p. 355.

Schiff says (same page) that the paths in the spinal cord for the conduction of sense impressions of touch are in the posterior white columns, while the tracts for the conduction of painful impressions are in the gray matter of the cord.

¹⁰ Darwin, *Power of Movement in Plants*.

¹¹ *Journal of Comparative Neurology*, Sept., 1892, p. 113.

power, by the countenance free from furrows, but not relaxed into weakness. Anger induces more or less rigidity of the muscles generally.

As a feeling is produced in an organ and is diffused toward the brain and cord, as in the case of erotism, there can be no centres in the brain for a feeling or sentiment, as the same tracts and consciousness may be concerned in another feeling at another time. The periphery alone differentiates feeling, and the end organ is the only centre. The kind of feeling, its degree, rapidity, etc., that is characteristic of the end organ is felt in consciousness. There are no centres in the brain for certain groups of feeling. For example, a voluptuous feeling arises in the genitals and memory of it is transmitted to the brain over the same tracts as other sensations and feelings. The organ is the seat of the corresponding sense. Decidedly in the eel, and in prior and subsequent forms, this erotic instinct modifies action, but as its brain influence is in the line of pursuit and motions similar to other prehensile acts no special seat in the cerebrum can be found for it. Bitings, embrace, etc., show that the same tracts are stimulated. Many of the differentiated feelings, sentiments, emotions, etc., are close to their bases, which are easily recognized when circumstances lop off the superstructure. But the obscuration of words leads the mind away from fundamentals. The feelings cannot be freed from intellect, while sensation and perception are the lowest forms of the connection of feeling and intellect. Where action is automatic feeling does not exist as in the case of visceral movements.

Sensation may be graded through small differences all the way from no sensation at all to where it is so intense as to cause pain which, if continued, may destroy the nerve. Two persons may be equally able to hear the same faint sound and be pained by the same loud sound, and yet differ in the grades of hearing, according to low or high organization. An artist may see differences of tint better than others, but cannot therefore see in the dark or stand strong sunshine any better than others. Musicians may not hear faint sounds nor be startled by loud ones. A mechanic with rough hands may have developed a special touch ability useful to his work. Idiots have blunt touch sense. Men

have more delicate powers of discrimination than women, according to Galton.¹²

As hunger is a primitive sense and a form of pain all pain may be considered as expressing hunger, but if appeased it means pleasure. Fear in one of its primary states is the fear of hunger, whence other fears are derived from association. Combativeness and destructiveness are associated with hunger appeasing. Curiosity is based upon a search for food and the higher curiosity such as is shown in a desire for knowledge is an expression of the need of exercise of faculties and organs originally devoted to more primary purposes. Play is a need of exercise of the senses. So, in the evolution of the brain, hunger appeasing senses and emotions would have the first place. We see the large number and great size of the organs necessary to provide for appetite, and the nervous system that relates these organs together and the brain on top of all is, in the main, devoted to eating and to enable the animal to get food to eat. These facts are completely lost sight of by the old school metaphysician, although they are so apparent as to merely need mention. Therefore, the centres of the brain are largely related to the purely selfish, though necessary, matter of eating and procuring food. This gives us a starting point in considering the functions of the brain and how they have evolved.

Emotions have no centres, as the feelings are general, but there can be centres for motion, and special senses and many intellectual functions are merely hunger appeasing abilities in their last analysis.

Consciousness is requisite in pain appreciation as well as any kind of feeling. The suppression or blunting of consciousness notoriously suppresses or blunts pain. The cognizance of pain being a cerebral process involving consciousness, cutting off the route to the brain by which pain is conveyed to consciousness disposes of the pain, but not of the cause originating it. Too many pain alleviators are mere deadeners of sensation. The inebriate "drives dull care away" with his dram, but awakes to a realization of having intensified his troubles by the means adopted to escape

¹² *Inquiries into Human Faculty.*

them. Schopenhauer holds that pains are positive and pleasures are negative experiences; that pleasures are due to the absence of pain and the intensity of one is often in proportion to the other feeling that preceded. Susceptibility to painful impressions increases with development of the nervous system in the ascending scale of life from lower animals to man and in the ratio of intellectual growth, and enjoyments are correspondingly multiplied and intensified. The pains and pleasures of the intellect are both qualitatively greater with its development.

The major anesthetics act upon pain by extinguishing consciousness in general, other chemicals arrest the pain consciousness alone, and in rare cases ether and chloroform have unexpectedly allowed intelligence to be preserved during the painlessness induced by them, while intermediate states between total and partial abolition of consciousness occur from insufficient anesthesia, to that which is called the surgical degree. Shock to the nervous system is more likely in the former case, and it sounds strange to say that, other things equal, death during an operation is more likely to occur from imperfect than from full anesthesia.

The philosophic claims of pleasure being not only antithetical to pain but due to pain absence, finds justification in the universal prevalence of care, which is essentially a painful state, and the fools' paradise to which the drunkard is conveyed by his anesthetic alcohol. Further, in parietic dementia there are both physical and mental anesthesia; the tactile sense impairment, akin to what is found in locomotor ataxia, is accompanied by the loss of care, indifference to what would otherwise cause grief, or other degrees of mental pain. The consequence is the feeling of well being, *bienfaisance*, and upon this is erected the "delusion of grandeur" which takes the direction of assertions of great wealth, strength, or powerfulness in some form, according to the ideals usual to individuals of different classes. So parietic dementia and the complacent megalomania stage of paranoia may be put in the category of pathologic mental anesthetics, all the more properly as both disorders indicate impending total destruction of the organ of the mind. Many bodily functions, such as digestion, assimilation, etc., are unfelt, conveying nothing of their workings to consciousness until some fault in their process renders them

apparent ; induces discomfort, anxiety, or pain. Interference with customary nerve action may ; under certain conditions, be the basis of painful sensations. In all life relations that which occasions the least effort impresses consciousness least. Changes from usual experiences may entail effort, greater expenditure, more labored heart and blood vessel impulses ; more heat is evolved, tissues are consumed and require more repair than usual. Mosso shows that thought is no exception to the rule, for blood pressure and temperature are raised in this kind of brain activity, and the wear and tear of cerebral structures in worry, grief, anxiety, can be as actual as from some mechanical destruction such as a tumor or direct injury could induce. Effort of any kind has in it the constant menace of pain, and relaxation the promise of release therefrom, though inactivity sometimes may also become painful if maintained by effort. Life itself is activity, whether in rest or in labor. Molecular or mass motion must proceed in varying degrees, asleep or awake, toiling or recuperating. And the law of relativity complicates considerations of activity and inactivity by making effort and rest impossible to classify under all conditions. What would be labor to one person is not such to another. Ease to one individual would be torture to another, and accompanying circumstances may convert what would be pleasure at one time into pain at another. Pain also is relative, for a certain nervous molecular activity may be over-stimulation in one person and normal in another. For the proper maintenance of nerve function there must be continuity of the conducting organ, a normal degree of pressure thereupon not to be exceeded ; heat above a certain level and within definite limits ; a suitable supply of nutritive material usually secured from the circulation, and that it should be suitable refers to both quality and quantity. Pain may result from interrupted continuity, from irritation or pressure upon nerves or their centres, from heat or cold extremes and from defective nutrition, provided that the sensory portion of the nervous system is not disabled from conveying intelligence of such changes to consciousness. Great organic destruction may proceed unrecognized as such until the sensory nervous distribution is in some way apprised ; so while pain may in a general way serve to warn of danger, it may fail to do so, or prove unreliable

- in making a great disturbance over an imperfect tooth while failing to inform the drunkard of the slow destruction of his liver or brain. History also abounds in instances of universal hubbub over trifles and apathy concerning matters of the greatest importance. Hunger is a form of pain which disappears in the extremity of starvation. One may freeze unawares but suffer acutely during warmth restoration. Local blood quantity may increase or decrease emotional, intellectual or sensory faculties. Nerve stimulants raise the spirits and make sensations keener. Sedatives diminish mental pain as they do physical. Only broad generalizations are practicable in determining what would be pleasurable or painful, for so many modifying factors complicate both extremes of these sensations that experiences when repeated may fail to act as before, or pain may become pleasure or pleasure pain. And what would afford pleasure to one person may be annoying to others. The color blind and tone deaf persons are merely bored by what others enjoy. Dean Stanley actually suffered from listening to music, yet Jennie Lind once told Max Müller he paid her the highest compliment she had ever received. Stanley was very fond of Jennie Lind, but when she staid at his father's palace at Norwich he always left the room when she sang. One evening Jenny Lind had been singing Handel's "I Know That My Redeemer Liveth." Stanley, as usual left the room, but he came back after the music was over and came shyly up to Jenny Lind. "You know," he said, "I dislike music; I don't know what people mean by admiring it. I am very stupid, tone deaf, as others are color blind. But," he said with some warmth, "to-night when from a distance I heard you singing that song I had and inkling of what some people mean by music. Something came over me which I had never felt before, or yes, I had felt it once before in my life." Jenny Lind was all attention. "Some years ago," he continued, "I was at Vienna and one evening there was a tattoo before the place performed by 400 drummers. I felt shaken, and to-night, while listening to your singing, the same feeling came over me; I felt deeply moved." "Dear man," she added, "I know he meant it, and a more honest compliment I never received in my life." What savages consider musical the civilized could not tolerate, and the untrained ear is wearied by

classical music as is the untrained mind by discourse beyond ordinary understanding. For this reason, as Herbert Spencer claims, wisdom always has appeared and always will appear to be folly to the ignorant. The special sense nerves have been excluded by some physiologists from among conveyors of pain, but blinding light, disagreeable sounds, odors and tastes are analogous to tactile pains, and are induced by over-stimulation or other comparable interruption to the customary nerve workings. As frequently more than a single factor enters into the creation of pain and its exacerbations, the withdrawal of one of these elements may modify or even relieve the suffering. For example it is told that a professor lectured through his hour unconscious of a cinder in his eye which made itself felt immediately afterward. Referring to the use of derivation such as blisters, hot foot baths, cathartics, etc., in relieving pain by reducing circulation in the painful part, enables the relief obtained by the professor to be explained as blood supply withheld from the point of irritation while the blood was contributing to brain functions.

In parietic dementia and megalomania the false happiness engendered by the brain destruction, and the disappearance of hunger when dissolution is begun, may serve to explain the *spes phthisica*, or hopefulness of consumption, through blunted pulmonary afferent impressions. Thus the reverse of pain accompanies anesthesia, or absence of sensation, and it is the thoughtless who are gayest and freest from care.

Lucretius, Seneca and Homer allude to what modern psychologists call the luxury of grief (Spencer), pleasure in pain (Ribot), and the pleasure of pain (Boullier). There are pleasures derived in some morbid conditions from physical and others from moral pain. Jerome Cardan wrote that he could not endure existence without pain and he resorted to self-torture to secure enjoyment. Krafft-Ebing discusses such flagellants as a recognized type of sexual perverts. The melancholy of lovers (spoken of by an Irishman as "sweet pain"), that of poets and artists is included in pleasureable pains. Spencer ventures the explanation that the feeling is one of pleasure in deserving more than has been received.

Depression of vital functions is involved in ordinary pain.

Melancholia is a "psychical neuralgia," according to Krafft-Ebing. The coupling of pleasure with what is beneficial and pain with what is detrimental, originated with Aristotle, but it is far from being a universal rule, for pain may be far more useful as a life-conserver than pleasure, and the latter may indicate dissolution, while both may be associated in apparently outrageous fashion in pathologic instances. Susceptibility to pain may persist in spite of anesthesia, though analgesia is a common accompaniment of loss of sensation. In locomotor ataxia anesthesia and the terrible shooting pains co-exist. Hyperalgesia can be considered as an aggravated hyperesthesia. The zone of irritability parallel to that of anesthesia on the chest of one with spinal cord disease, can be explained by the hyperesthesia being due to central nerve root irritability as a forerunner of the more serious cause of the associated loss of sensation in the adjacent nerve distribution. If this irritability involved the blood supply reflex of the spinal cord gray matter, pain is intensified and is induced by ordinary stimulation of the implicated nerves. In "Comparative Physiology and Psychology" (1883), I detailed reasons for the existence of what could be called a "nutrient reflex," whereby blood was instantly impelled to localities in the body that had undergone waste through action, and were hence in need of repair. The mechanism consisted in an intimate association of the vaso-motor nerves with the cerebro-spinal nervous system as seen in the rami communicantes running from the spinal to the sympathetic system of nerves and their ganglia. It is only by introducing nutrient reflexes into consideration of all the higher vital processes that they can be even approximately understood. The regulation of the caliber of blood vessels, the swiftness of the current of blood and the amount supplied to parts in proportion to their needs in such parts, by a harmonious working of the vaso-motor nervous system with the cerebral and spinal, when carefully considered, clear up many an obscure point in nerve and brain physiology and consequently in psychology. Failure of this relationship will also account for pathologic phenomena explicable in no other way. Thus in hysteria, instead of proper vascular workings, blood is withheld from cerebral centers, giving rise to aphonia, deafness, blindness, etc., and when impelled to inappropriate parts an inver-

sion of the emotional exhibitions may result in pleasant impressions starting the weeping mechanism, and laughter following upon unpleasant impressions. Cramped vascular and other renal channels sufficiently account for hysteric urinary suppression, and relaxation of these parts induces the copious *urina spastica*, or vast quantities of limpid urine, passed after a hysteric attack. Ordinary toothache induced by alveolar abscess is lessened by whatever draws blood from the painful part and is increased by hypermeia. The irritation of the carious tooth starts the pain, but the battle of the phagocytes and micro-organisms induces an increased blood accumulation, which by mere pressure may intensify the agony. Relief through evacuation of the abscess points to the blood pressure as the aggravator of the pain. When pain is relieved by a mental impression it can best be accounted for through derivation. Some other portion of the cerebral or other organ drains away the overplus blood, with corresponding relief. Some headaches dependent mainly, though secondarily, upon too much blood, or erratic blood distribution in the brain meninges, can be relieved by whatever will determine blood elsewhere, whether by full or partial hot bath, a mustard plaster, a changed current of thought, or a mental impression. Conversely an anemic headache may disappear upon lying down or by heart stimulation. That the circulation participates in suffering either as a cause or consequence is readily observable. Congestion may induce tactile pain, offensive odors, ringing in the ears, flashes of light or perverted taste, according to the nerve distribution affected; the extreme congestion can obtund or even cut off special sense appreciation, inducing anesthesia, deafness, blindness, inability to smell or taste, through pressure, and the opposite extreme of bloodlessness can set up identical defects. The old saying that "pain is the cry of the nerve for purer blood," is in a restricted sense true. Impure blood may induce pain through acting as a foreign substance and through reducing the quantity of blood proper. Pain may be the cry for less blood also. Headache from bad air is a toxemia, ordinarily relieved by fresh air. The insufficient oxygenation renders this qualitative a quantitative condition. Headaches caused by tumors, especially by grinding luetic headache, are through meningeal nerve pressure and irritation.

Similarly meningitis and injuries to the head that involve the brain and its covering, when inflammatory conditions follow, depend upon the vascular troubles associated with such inflammations. Reducing the blood supply to the head modifies the pain and destructive processes. Irritation of ordinary sensory nerves suffices to cause pain, as when an amputation stump cicatrix includes a nerve and neuromatous growths are formed. That the circulation contributes to the pain is evident through the desire to elevate the stump and by gravitating the blood therefrom allay the suffering. Normal irritation of nerves produces the feeling of general comfort, free breathing, and tactile impressions generally. Hunger, thirst, malaise, horror, fatigue are due to nerve terminal irritation. Mechanical, chemic, thermal and electric stimulation may cause pain if transcending certain limits, or if intense enough may destroy sensation altogether, and beyond this the anesthesia dolorosa may appear. Pains are not always definitely located, through irradiation, or may be referred to the wrong source of origin, as when amputation pains are felt to be in the lost member. Varieties of pains are in proportion to the intensity of stimulus, and massiveness regards the number of nerves involved. Most of the differences described by the words piercing, shooting, cutting, boring, burning, pressing, gnawing and acute, are due to the intermittent or continuous molecular changes in nerves or their centers, but the throbbing and dull pains usually owe their peculiarities to arterial or passive congestion. The headache known as angio-paralytic has been often relieved by pressure upon the carotid supplying the aching part and the angio-spastic kind should be treated by means calculated to relieve spasm, such as amyl nitrite inhalations. In the one case there is the hyperemic throbbing arterial impulse, and in the other intense constriction of vessels inducing localized anemic pains. In inflammatory affections of the skin hyperalgesia may be so extreme that a breath of air or a light touch produces pain. The blood superabundance in the nerve terminals here is plainly the cause. The disordered sensations called paresthesiæ including chills and burnings, creeping, itching, formication, are related to pains, and may become so intense as to become such. Causalgia and Erythromelalgia are described by S. Weir Mitchell

as burning sensations and reddenings due to central nerve irritations. Neuralgias, with shooting pains transmitted the length of the nerve affected, primarily or secondarily involve blood distribution, and inflammation of nerve roots frequently give rise to neuralgias. The inflammation may not be the cause of the original disturbance, but even though produced by the same irritation that induced the neuralgia it is an aggravating factor, and when this inflammation is controllable a step toward possible cure is taken. The structural commotion recognized as pain can only be maintained by blood presence, as nutrition is necessary for prolongation of any vital phenomenon. When the vascularity of a point of irritation, such as the amputation end of a nerve, is relieved of blood supply by gravitation or pressure the pain is lessened. Anesthesia often accompanies bloodless peripheral states and the numbness of freezing depends upon the constriction of blood vessels and other circulatory reduction in the frozen part which visibly whitens through being deprived of blood.

Inflammation of a spinal nerve root or in the sensory neuroglia of the spinal cord causes the lightning pains of neuralgias, ataxia and sciatica. Relief of the inflammation necessitates more than mere temporary alleviation of the pain, for the primary cause of the irritation that induced the inflammation must be reached, and a destructive process in the nerve centres from chemic changes is too often beyond control. Among painful states associated with too much engorgement of nerves or their centres are all the hyperemic, congested or inflammatory cerebrospinal disorders, such as some headaches, toothaches, neuralgias, ataxic pains, overheating, hyperalgesias and hyperesthesias. The opposite condition of relative bloodlessness occurs in cold, hunger, thirst, fatigue, pressure, anemic headaches and other painful states depending upon reduced blood volume. Blood poisoning by alcohol, septic matter, gases, etc., while qualitatively altering the blood for the worse, reduces the quantity of pure blood to parts and act as anemic factors, while the foreign substances "irritate" the nerve centres. Uric acid crystals mechanically cause pain in the kidney tubules, ureters and bladder, and may reasonably be regarded as sensory disturbers elsewhere. Sodium urate deposits in the joints exert painful pressure. In all these phases of

suffering we observe an irritated part of the nervous system, bloodlessness or engorgement, associated with the pain, either as cause, effect or added factor. A toxic substance circulating in the blood, whether introduced from without or manufactured in the body, if denied proper elimination, as often takes place with uric-acidemia or other auto-intoxication, may irritate the vascular nervous control so as to produce contracted arterioles with increased arterial tension, a spastic condition observable in migraine and to an extreme in the frightful raptus melancholicus. In these disorders, irritation primarily and relative anemia secondarily, are at the foundation of the suffering, while as a consequence engorgement of other organs or parts of organs complicates and adds pressure, or congestive pains. Over-stimulation of nerves often produces over-stimulation of the circulation or even its practical paralysis, with localized hyperemia and resulting pain. In short all painful states may include the conditions of irritation, too much or too little nutrition, separately or combined, in various ways. These pain factors may be symbolically represented by the initials of irritation, hyperemia, anemia, to graphically illustrate pain, however induced: Uric acid headache: I. A.; the irritation causing the anemia. Chlorosis headache: A. I.; the anemia causing the irritation. Cerebral congestion: H. I.; the congestion causing the irritation. Over-stimulation: I. H.; the irritation causing the hyperemia. These three conditions may be combined simultaneously or successively to produce very many apparently discordant pathologic states. Anemia in one part, however induced, may result in congestion in an adjacent part, and the pressure hyperemia may cut off nutrition from surrounding points so that both hyperemia and anemia may occur in closely related parts, each condition adding its special influence to the total pain; so the localized pain may have the formula I. A.; I. H.; I. H. A. within a narrow area, or either H. or A. may cause I., and, further, the combination I. H. A. may set up intensified irritation; the withdrawal of one factor serving to lower the pain intensity and paving the way to removal of the entire pain. Let I. be induced by an exposed nerve, H. follows with maybe A. in contiguous parts by pressure of blood; now while the removal of H. by blood evacuation may reduce the aggravating influence of blood pressure, which acts irritatively, the most

sensible thing to do is to get at and remove the primary cause of the pain by protecting the nerve from exposure which sets up the hyperemia. If an abscess results from the phagocytic battle the septic advance adds further irritation, which must be disposed of in attempts to remove all causes of pain. A general blood condition may favor the production of pain by having within it the elements of disturbance ready to centralize upon a weak point. Analogous sociologic states exist. Peter the Hermit and Walter the Penniless were foci of irritation in the eleventh century, leading up to the crusades in which two million Europeans were slain in two centuries. This blood letting finally carried off the disturbers and the disturbed, and, therapeutically, venesection has for ages been resorted to in pain relief, though derivation or the transfer of the disturbed circulation is nowadays preferred. A point of irritation may be starved out by keeping nourishment reduced, it may be evacuated at the expense of the blood, or it may be held in check by removal of the elements that nourish its fury, or, best of all, the focus sometimes may be directly destroyed by medical or surgical means. Far too often this latter process is impossible through inability to determine at the proper time just where or what the primary disturbing influences may be, or even if determined there is in most cases inability to get at and remove the origin of the pain. But the safest rule to adopt is to attempt to do so if within possibility, and where relief of pain is imperative with no practical means of removing the cause only such agents should be resorted to that do not entail other and often greater disadvantages to the economy, sooner or later. Only such portions of the body as are supplied with sensory nerves relate consciousness to pain. Irritation of unsupplied parts may advance to various forms of destruction and until the sensory filaments are secondarily involved by extension, or through accompanying circulatory alterations, the warning which pain is supposed to afford is absent. Several of the recently discovered synthetic compounds combine antipyretic with analgesic properties in different degrees. Acetanilid, formerly known as antifebrin, has been too recklessly used. It depresses the heart dangerously and requires careful watch of its physiological effects. "Antikamnia"¹³ has

¹³ Helbing, *Modern Materia Medica*, p. 3.

been found to contain acetanilid, sodium bicarbonate, caffen and tartaric acid. In many such advertised preparations the possible introduction of acetanilid should be regarded. Even external application of acetanilid, as has been suggested for antiseptic purposes, is dangerous. Pseudo-scientific compounds, mainly with acetanilid mechanically mixed with other substances, can be avoided by learning the status of their originators, manufacturers and clinical reporters. Antipyrin is incompatible with too many materials to enable its administration in combination with ordinary remedies. Cesari's claim that it thickens and condenses the blood without coagulating it may account for its hemostatic properties and should be regarded in a study of its anti-neuralgic, antipyretic and other influences. Methyl chlorid as a spray produces local anesthesia through freezing the part to which it is applied. The visible whitening of the surface that occurs during its application indicates that bloodlessness is the cause of the sensory arrest. Paraldehyde is an unreliable sedative or hypnotic. Phenacetin or phenocoll have been successfully established as sedatives and are far safer than acetanilid or antipyrin. The salicylates and salol possess indirect slight analgesic properties, due to their antiseptic and anti-rheumatic tendencies, and dilute carbolic acid blanches animal surfaces and produces local anesthesia. Cocain hydrochlorate likewise reduces blood circulation at the point of local anesthesia. Its fascinating temporary euphoria and later excitation of nerve centers are worthy of study among psychologic effects of drugs. Opium and its congeners are responsible for legions of debauched habitués, most of whom date their addiction from incautious prescribing. The benumbing influence of alcohol and opium upon the nervous system generally account for their exhilarant influence, on the principle of mental anesthesia inducing relative exaltation; the relief from care, concern and painful memories being subjectively interpreted as happiness. The debased sensory apparatus of the parietic dement causes him to insanely ascribe his buoyancy and general good feeling to greatness or good fortune realized. Drugs that depress the motor apparatus mainly, such as conium maculatum, do not exalt the sensory field, rather the reverse, but many degrees of association between anesthesia, analgesia and exhilaration are ob-

servable in other neurotic medicines. Opium primarily relieves pain, raises the spirits, then stupefies. Alcohol anesthetizes, exalts and ends in stupor. Chloral may benumb the nervous system, mildly exalt, then stupefy. Chloralamid, a much safer article, is mildly sedative, causes hypnosis, and the day following large doses a feeling of exhilaration is reported. Chloroform and ether excite, and finally obtund consciousness. Oxygen gas exhilarates. Nitrous oxide gas first exhilarates, and then affects consciousness. The bromides depress the circulation, are mildly analgesic, and in over-doses stupefy. Ergot by constricting overloaded blood vessels may secondarily act as an analgesic.

It has occurred to me that the physiologic chemistry of *materia medica* could be appreciably advanced by tabulating the effect of graded doses, particularly of the recent synthetic compounds, as to when the sedative, antipyretic, antiseptic and hypnotic effects, if any, ensued, juxtaposed with their rational chemical formulæ, their relative looseness or closeness of molecular construction and affinities, with their relations to temperature, solubility, etc. The rapidity or slowness of compounds to enter into new combinations under the conditions afforded by the bodily organs has greatly to do with the therapeutic effects. Antipyretic influence can be exerted through action upon the blood vessel tonus or the blood corpuscles, and in some instances upon the thermal brain centers demonstrated by Ott. Antisepsis can be conceived in such preparations as acting directly upon septic material or so modifying their products or the vital fluids as to lessen septic activity. Antagonism to fermentation is often practically antisepsis. Analgesia can result from the direct influence of antiseptics upon irritative points susceptible to their influence; from allaying some consequence of irritation such as an accelerated circulation which aggravates pain, and if pain is due to circulatory faults mainly or wholly this effect upon the heart, arteries, or blood tends to relief. The visible change in the blood materials claimed by Cesari when antipyrin is given can readily be tentatively assumed as a cause of heat reduction, and incidentally pain alleviation. The rush of phagocytes to an irritated point is accompanied with accumulation of red blood corpuscles. Pain can not continue without the material that enables molecular

activity, and this material is afforded by the blood and lymph. Drive away congestion and though the cause of the irritation may remain, its influence is lessened greatly, and the warrior wandering cells have better opportunity to attack the foreign material unless they also are driven from the field of battle. The pain of a "bone felon" is modified by holding the hand aloft; the Esmarch's bandage anesthetizes by blood deprivation; freezing anesthetizes similarly. Derivation may not be the means by which a disorder can be cured, but when blood accumulation in an organ is pathologic its distribution at least facilitates recovery.

When the professor set his cerebral machinery in motion so that his brain required blood and withdrew it from the optic that was being irritated by the cinder, the pain was absent until the lecture was concluded. Similarly, the seat of consciousness can be affected by hysteric, erratic blood-vessel action, so as to produce or terminate pain and paralysis through mental influence, and the pain suppression occasionally accomplished under hypnotic conditions is undoubtedly of this nature, and the seat of consciousness may, through derivation of blood by physical or mental action, be similarly affected. The operation of the nutrient reflexes in connection with every nerve impulse should have careful regard by physiologists, and many a mystery would be thus disposed of. The association of antiseptic properties with the analgesic and antipyretic in so many of the phenetidin compounds is also worthy of consideration. If such antiseptics is secured through a direct action of the medicament upon living plant and animal micro-organisms, within the varying degrees of arresting or destroying their vitality analgesia likewise could ensue from chemical lowering of nerve function, directly or through blood changes such as occur with antipyrin.

So it ceases to be remarkable that a substance hostile to minute organisms, an antiseptic, should also act as an antipyretic and analgesic by chemically exerting control over such vital operations as heat and pain production of higher organisms. These lessened molecular activities are exerted in different degrees by the different compounds; some are too strongly antiseptic to be safely used as analgesics or antipyretics; nevertheless the three properties are connected, notably in the case of carbolic acid, and

to a safer therapeutic extent in the phenetidin derivatives.

All the senses and emotions have their associated pains and pleasures. Strong light may pain the eyes (photophobia), due to a normal or abnormal sensitiveness, and we speak of a painful sight. Smells may pain, the very breathing may be painful. Sounds may pain by intensity, disagreeableness or association. The touch sense is pained by a bruise or stroke. The operation of the senses may be attended with pain and with pleasure, but as a rule the pleasure is the negative, the absence of pain. In the absence of all mental pain and responsibility the insane person, especially the parietic dement, fancies he is enjoying pleasure.

The atoms are blindly attracted and a state of tension or unsatisfied combination may be compared to pain, a gratified combination of pleasure. The ignorant are guided less by reason and more by palate and immediate desires. The subsequent experiences and growth of intelligence change likes and dislikes radically. A child or ignorant person will eat a poisonous fruit because it tastes pleasantly. Through instruction a dread of that same fruit may be imparted and the knowledge of poison deters the child from eating it. The difficulty of breathing, dyspnoea, stomach uneasiness, and intestinal distress, are among the most rudimentary and earliest of painful feelings.

Happiness is a condition of mind often confused with the means of happiness. It is purely relative as shown by the tramp when presented with \$10 being elated, and the wealthy person taking his life when his losses reduced him to \$50,000 per year income. Bishop Butler claims that "happiness is the congruity between a creature's nature and its circumstances." Darwin suggests that some instincts are determined by fear or other painful feeling. Heredity may prompt to action without either pain or pleasure. A pointer cannot help pointing, hence pleasure or pain is not the incentive to actions in all cases. A habit may be blindly followed and cause disagreeable feelings if interfered with. Suffering is a universal rule in accomplishing anything. Effort must be made and it is often, not always, painful. Few changes are made for the better without it, mainly because a tearing up of old methods and running counter to some one's "rights" (usually to do wrong), or fighting some one's vested interests, raise oppo-

sition and retaliation. The adjustment of inner to outer relations may entail pain as in electrical states and humidity changes before equilibrium is attained, causing rheumatism and amputation pains to increase and neuralgias may be made worse for similar reasons.

Lower animals feel pleasure and pain, happiness and misery, in varying degrees, according to the development of their sensory apparatus.

To be satisfied is essentially repletion, in one way, and contentment in another. It may be associated with retrogression at times, through its inducing cessation of function, for effort is a main cause of development. The end of anxiety may also be recuperative, if it does not result in supineness. A poor man may become rich and fairly contented, but his riches in many ways may not prove beneficial. What would cause pain to a person may become a pleasure, later, or be regarded with indifference. Toleration for stenches and unpleasant tastes may be acquired or reconciled, as in eating a Java fruit or limburg cheese. Decomposition odors are offensive by association and asphyxia effects. Animals vary in their tolerance of sense impressions, especially odors, and have attraction to some very disgusting smells. Chinese and Arabian music is appalling to Europeans.

The aged sometimes regret their past, as when young they yielded to temporary attractions regardless of future pain. It requires a high development to refrain from immediate enjoyment for the sake of others and the future.

The savage and the revert may take pleasure in inflicting pain upon others, though quite capable of knowing what pain is.

Dogs and apes resent being ridiculed or laughed at; they keenly feel the degradation and try to protect themselves from it.

There is a pleasure on the part of the average person in feeling that one who was looked up to has been dragged down to the general level, because superiority is unwillingly acknowledged, and there is delight in degrading others. It is because of this that gossip and malice, uncharitableness and disparagement are so common.

Note that when the weather bureau makes a wrong prediction of the weather many are happy in chattering of the fallibility of

science, even though ninety per cent of successful predictions are made unnoticed. The ignorant like to fancy that no one knows any more than they do. It elevates them in their own estimation above those who offend them with superiority.

Dr. Lange, a Danish physician, first suggested that the organic conditions with their various manifestations provoked by an internal or external excitation or by an idea, the appetites, needs, desires and inclinations are the primary elements in emotions and that the emotion itself is nothing but the revelation of these things to consciousness. Pleasure and pain follow the changes in the tendencies of the organism as the shadow follows the body. Where the normal person feels pleasure the abnormal may feel pain; pathological conditions may pervert tastes and instincts; bloodlessness, gout, rheumatism, dyspepsia, heart disease and other diseases frequently cause such perversions of emotions. So consciousness is a mere spectator, and is not concerned in the making of emotions. Intoxicants, shower baths, chemicals, may paralyze the blood vessels and influence the degree of the emotion, so by suppressing the motor manifestations we also suppress the corresponding emotions. What the movements of the body and its apparatus express objectively consciousness expresses subjectively. Binet and others hold that pleasure is merely the consciousness of a feeling of complete equilibrium within the limit of the needs, tendencies and desires. Deviations by addition or subtraction produce the sensation of pain, a negative pain if above, and a positive pain if below the plane of satisfaction. There is no disagreeable or agreeable quality of a sensation, all depends on degrees of intensity. Every excitation, actual or revived, produces certain modification in the circulatory, respiratory and secretive systems. The nature of the interested organs determines the special character of the emotion which is produced, the intensity of the modification determines the agreeable or disagreeable tone of the emotions. The affective life is thus intimately related to the fundamental phenomena of organic life and primarily to motion.

The pain of grief can be ascribed to the interruptions of nervous and vascular workings to which we are regularly accustomed. Charcot cites an instance of the inability to grieve in one

case being due to impairment of the visual centers. The merchant could form no idea (mental picture) to himself of how his friend appeared, and hence his sympathy was at a loss for a subject upon which to exercise it.

"He cried like a calf," is a remark sometimes heard. It is no disgrace for a calf to cry, and he sheds tears in quantities when his emotions justify them. It is even easier for him to cry than for many other animals, because his lachrymal apparatus is perfect and very productive. Ruminants weep most readily. Hunters have long known that a deer at bay cries profusely. The tears will roll down the nose of a bear when he feels that his last hour is approaching. The big, tender eyes of the giraffe fill with tears as he looks at the hunter who has wounded him. Dogs weep very easily. The dog has tears both in his eyes and voice when his beloved master goes away and leaves him tied up at home. Some varieties of monkeys seem to be particularly addicted to crying, and not a few aquatic mammals also find it easy to weep when the occasion requires it. Seals, in particular, are often seen to cry. Elephants weep profusely when wounded or when they see that escape from their enemies is impossible. The animals here mentioned are the chief ones that are known to weep, but there is no doubt that many others also display similar emotion.

In "Comparative Physiology and Psychology" I gave the derivation of weeping from associated serviceable habit of shedding tears to moisten eyeballs pained by dryness, fishes having their eyes bathed in water, and salt tears are developed later in batrachia.

Schopenhauer holds it is the good which is negative, in other words happiness and satisfaction always imply some desire fulfilled, some state of pain brought to an end. Pain can be positive because it means a tension of molecules, which relieved means pleasure, for a short while, but is followed by new desires, affinities and new molecular possibilities.

"The pleasure in this world outweighs the pain, or there is a balance between the two. If the reader wishes to see whether this statement is true let him compare the respective feelings of two animals, one of which is engaged in eating the other.

"One with a soul above the common or a man of genius will occasionally feel like some noble prisoner of state, condemned to work in the galleys with common criminals, and he will follow his example and try to isolate himself."¹⁴

Happiness is best not sought, and then it comes unexpectedly. Those who seek it are chasing phantoms. Voltaire claims that happiness is but a dream and sorrow is real. So to live happily means to live a tolerable life—less unhappily.

Relativity is evident in little things annoying when there are no great ones to do so, and when there are the little troubles are unfelt.

In parietic dementia trifles annoy and serious matters do not, as the brain is degraded beyond reaching to the larger conceptions, but remains irritable to the lesser.

Some sayings that are worthy of study among multitudes that are accepted, but that will not bear close examination, are :

The happiness we receive from ourselves is greater than that we obtain from our surroundings.¹⁵ Men are not influenced by things, but by their thoughts about things.¹⁶ The man born with a talent he is meant to use finds his greatest happiness in using it.¹⁷ Many rich are unhappy because uncultured. What a man is contributes more to happiness than what a man has. The more a man has in himself the less inclined he is to company.¹⁸ Properly constituted people long for action and soon tire of leisure, not excepting the student who longs for what others call leisure to enable him to exercise his brain.

Pain may be regarded as positive because it is based on a tension of unsatisfied molecules. When they are satisfied pleasure may be said to result, but this means new desires, new affinities and new molecular cravings. For this reason atoms, animals and men can never be satisfied, notwithstanding it is as Marcus Aurelius Antoninus says, that "the greatest part of what we say and do is really unnecessary. If a man takes this to

¹⁴ Schopenhauer, *Essays on Pessimism*.

¹⁵ Metrodorus, a disciple of Epicurus.

¹⁶ Epictetus.

¹⁷ Goethe, *Wilhelm Meister*.

¹⁸ Schopenhauer.

heart he will have more leisure and less uneasiness." The "Arcadian happiness and simplicity" were mere fables.¹⁹

David Hume remarks the relativity of pains and pleasures thus: "In all kinds of comparison an object makes us always receive from another to which it is compared, a sensation contrary to what arises from itself in its direct and immediate survey. The direct survey of another's pleasure naturally gives us pleasure, and therefore produces pain when compared with our own. His pain considered in itself is painful, but augments the idea of our happiness and gives us pleasure." The underlying explanation is in our selfish dislike that others should enjoy what we have not and our pleasure that others suffer more than we do. So the comfortable man looks out of the window upon the one in the storm and cold, as the wealthy complacently regard the poor as getting what they deserve, Divine favors being reserved for Baer and other coal barons. Exceptionally, where the secondary ego, the true altruism, is developed in rich or poor, this is not the case, and sympathy may persist under all circumstances, but this is most often in the poor or in those like Probasco, who impoverished themselves to help others. Ordinarily we comfort ourselves by knowing that others are either as badly off, or are worse off, than ourselves.

In Comparative Physiology and Psychology I gave the origin of laughter as being from the eating motions, the deglutitive chuckle and gobble of the hogs and other animals, and that later association transferred the originally serviceable gobbling movements, which accidentally caused sounds; to expressions of allied content and satisfaction. The grunt of savage assent can be readily derived from his uncouth noises at meals. The ready laugh of the appeased infant at the breast shows the origin of this expression of happiness quite plainly. It has also undergone inhibition so that it is not now manifested so readily except among the uncultivated. Man is by no means "the only animal that laughs," as has been asserted. Pleased dogs, for example, of some breeds with mobile mouths; others laugh with their tails, or the wriggle of their bodies.

¹⁹ Hansen, *The Lands of Greece*, p. 381.

The association of discomfiture with laughter points to its animal origin of pleasure in destruction in devouring other animals. We laugh when others are less fortunate than ourselves. Sympathy may develop into taking no pleasure in the sufferings of others, if directly under our observation, but for suffering in the abstract, such as a distant famine, we have no sympathy, as imagination is not strong enough to thus enlarge our sympathy.

Excitement includes by gradations everything that the animal, as such, can do, from sleeping to fighting or running. Under activities of feeling and emotion, graded from mere sensations, as every other mental excitement originates, we have joy and sorrow as pleasure and pain expressions. They are recalled only through remembering our ideas in regard to them and the things said at the time, hence it is folly to expect to find such things as centres in the brain, for joy and sorrow, they are general feelings of satisfaction or unsatisfied tension. Any pleasant memory may cause joy and high spirits. The joy of maternal love is a selfish feeling, possible only where the nerve and sense development enables offspring to be recognized. Paternal love is later in development and springs from proprietorship and duty, with occasional vanity. Both parental affections may be cultivated for foster children. Habit and heredity have largely created such likings, just as they have also made ingratitude of children the rule. Hope, according to James Mill, is anticipation of an agreeable feeling, hence it is a memory exercise, a renewed sensation, as joy is the realization of what is anticipated.

Desires and cravings are based on atomic tensions, they are organic appetites, associated or not with consciousness, involving subjective feeling, vague, misunderstood or otherwise. Attention and choice are also involved if consciousness and will power are included.

CHAPTER XIV.

THE INSTINCTS AND EMOTIONS.

The many functions of body and mind are so blended and depend upon each other to such different extents that no sharp divisions can be made between these functions. Arbitrary groupings can be used with the understanding that they are only for convenience of classifying and are not natural separations. Thus instincts, emotions, feelings, and even sensations, are often inseparable, and as consciousness, and frequently some forms of reason, are unavoidably included in intelligence, the artificiality of any system of tabulation of animal activities is evident, though in a general way an attempt of the sort is useful and justified.

Thus among feelings, emotions and instincts the sexual desires could be entered, and in higher intellectual life this passion develops into love by being bound up with a lot of mental processes, comprising reason, judgment, æsthetic considerations, and even self-sacrifice; the sexual ardor thus ceases to be merely instinct, as it includes too much, nevertheless its base is in an instinct of the most powerful kind.

Joy, grief, hope, hate engage these so-called feelings, and are instinctive and emotional, but for convenience we can profitably place the first two under Feelings, and the others under Emotions, but capable of criticism in any case, no matter what disposition is made of them, except this tentative apologetic one.

Spencer calls instinct compound reflex action, or organic memory, and observes that memory is also an instinct which by multiplication of experiences is made stronger, and memory is incipient instinct, and between instinct and reason there is no gap. J. A. Thompson¹ discusses instinct and refers to Spencer's definition that it is reflex action, non-mental, an adjustment of nerves and muscles, partly conscious, and that reason or intelligence is

¹ The Study of Animal Life, N. Y., 1896, pp. 153, 166.

the faculty of adjusting means to ends, but for that matter so is instinct, which is reflex action, however complicated. Reason may precede instinct in the individual, as when learning to play the piano or to paint pictures requiring attention and interest of some sort, also conscious effort, and finally when a piece of music is mastered, neither consciousness nor effort is required, as the musician may play instinctively, or in his sleep. Deviation from easy machine-like muscular motions when once acquired, of course involving brain and nerve habitual adjustment, is so difficult as to compel the painter to use his left hand when he wishes to overcome an undesirable precision of touch that constitutes his "style." A penman may resort to similar means. This tract definition of the nerves succeeds reason, though inherited or other instinct may be through tearing up of tracts disintegrated by reason and subsequently reinstated as instinct again of a different kind. That instinct is the end and destruction of reason is markedly evident in its causing the death of numberless animals, as in the case of the Norwegian lemmings, that swim out to sea to perish in their instinctive, inherited efforts and desires to reach some farther-off land.

Inherited traits necessarily accompany and depend upon transmitted arrangement of brain shapes, grouping of nerve bundles and fibrils, and where reason attempts to introduce new habits or adjustments, some of these old built-up tracts must be torn up to accomplish new ends; effort, and even painful consciousness are often required in such changes, and finally new habits may be built upon the downfall of the old, more readily in youth, when the brain, nerves, etc., are more pliable, than when later they are too firmly organized. Hence the fixity of habits of age and the capabilities of starting in new directions when young.

Coughing and sneezing were once voluntary acts; fishes still retain the ability to remove offensive substances from their throats at will, but through incessant repetition evolution has fostered these acts as unconsciously, unintentionally, instinctively, performed reflexes, when foreign irritating matters are to be expelled from the throat.

Darwin observes that as man possesses the same senses as the lower animals, his fundamental intuitions must be the same. Man

has also some instincts in common, as that of self-preservation, sexual love, the maternal love for offspring new born, the desire of the latter to suck, and so forth.

Instinct sometimes lessens as the intellect develops. Darwin notes that intelligent actions after being performed during several generations become converted into instincts and are inherited, as when birds on ocean islands learn to avoid man.

There seems to be a relation between a few degrees of intelligence and a strong tendency to the formation of fixed, though not inherited habits; persons slightly imbecile tend to act in everything by routine or habit, and they are rendered happier if this is encouraged.² The aged person and the senile dement particularly tend to this fixity of actions.

Most activities are founded on the memory of past events, on foresight, reason and imagination, in both man and animals, and these may become fixed, instinctive, or habitual.

Wallace³ says that much intelligent work done by man is due to imitation and not to reason. While man has to learn by practice, the beaver and bird build, and the spider spins its web, apparently as well the first time it tries as when old and experienced. He thinks that the Indians travel the trackless deserts by instinct, that both instinct and reason are displayed by birds in building nests, and that men build by reason and imitation, and he tells how young birds learn to build nests, but that the skill of birds is exaggerated, and that the works of mankind are mainly imitative. Birds alter and improve their nests as men do their homes.

In a rough way we may divide the nerve centres for reason and emotion. The lowest levels being assigned to reflexes, the highest for reason, and the intermediate for emotional expression. The baby responds reflexly, the youth emotionally, and the adult more reasonably as the higher systems are organized. Failure of development may leave the idiot a baby through life, the imbecile an emotional youth, however old he may grow, precocity develops some in advance of their age and always erratically, often associated with tuberculosis of the brain.

You may experience an involuntary feeling of disgust or even

² Descent of Man, Chapter on Mental Powers.

³ Natural Selection, Ch. IV, Instinct.

dislike the decrepit, the doddering, the helpless, or the beggars, and this feeling may surprise and mortify you, but it is one for which you are not accountable, for it is your inheritance from thousands of years of your progenitors, and is an expression of the cruel dislike of the animal to whatever appeals to us for aid, because likely to interfere with our selfish personal comfort.

In special instances this repugnance has been largely overcome and yields to the sense of duty, to habit and to other antagonisms of reason or sympathy, but the brute instinct is there ready to astonish you by its presence in most unexpected ways, showing that consciousness is one thing and emotion another. Further, you may be guilty of a cruelty or neglect and your consciousness becomes aware of it afterward, and, according to your training, subsequent feelings of approval or disapproval also arise in your consciousness, but this latter did not proceed or originate, or even suggest, any such feelings, impulses or acts. It merely felt what you thought or did. What is intellect in an animal may become instinctive later, and changes in environment may compel the animal to forsake his instinctive inclinations and resort to reason again. Animals herding together are more apt to depend upon instinct such as imitation, while the non-social develop thought for themselves. The migration of birds and fishes and hibernation of some mammals are instincts. The homing pigeon has a remarkable instinct. Ants, bees and beavers are specialized in their development so as to make them instinctive workers in certain narrow lines.

Money getting is an instinct which among capitalists is associated with the pleasures of achievement. The instinct of work is derived from the need of movement. Animals instinctively avoid poisons and serpents. An egg-sucking monkey will exhibit his abilities soon after birth. The chicken, when hatched, pecks at the fly. Seton Thompson tells of Lobo the wolf developing his instincts into intelligent methods and dying through faithfulness to his mate.

Lines of least resistance through heredity and associated serviceable habit determine the presence and extent of instincts and emotions, and the insane are apt to exhibit these basic matters

when the intellect is sufficiently degraded to lose control over them.

Religious and political excitement are means of emotional exhibition, but not emotions by themselves, as supposed by those who speak of religious insanity, when the religious excitement was a mere means of showing the insane emotionalism which pre-existed.

Fear is a universally distributed emotion, developing in various directions and associated with everything that any animal may do. Even plants that shrink from touch may have at least the motor part of the fear reflex if the sensory is absent. Emotional expression is divisible into that of pleasure or pain, subdivided into laughter, smiles, complacency, according to intensity; agony, astonishment, grief, despair, quiet, shyness, the mixed expressions being those of anger, sullenness. Anger implies the effort to remove or attack any pain inflicting agency.

The tendency of northerners is to suppress emotional exhibitions which are common in warm countries. Songs are emotional expressions. Mere phraseology or resonant words excite negroes and others with untrained intellects more than appeals to reason. For instance Bryan carried away his audience with his "cross of gold" prettily worded sentence which when analyzed is silly, as time convinced the people it was.

The emotions or passions have no centres in the brain, but arise in the body generally and later affect consciousness, as shown by your asking yourself why you grew so angry, why you should have done this, that or the other impulsive thing. Motion gives both physical and mental pleasure and sometimes enables pain suppression, its lowest form in animals is that of moving about and among its highest associates is the love of freedom.

Play of all kinds, even exercise of the mind, work, whether physical or mental, gambling, games of the field or of chance, all are developed from the absolute need of motion. Children are tortured by being kept quiet, and hunger is the great impeller to motion in general. The sport of birds and other animals, especially the monkeys and the puma, indicate its general animal origin. Even under the microscope otherwise invisible animals have been seen to play.

Sleep is instinctive for the purpose of distributing food to brain, muscle and other bodily parts exhausted just as ground lies fallow till fertilized, a process requiring time, because the progressive chemical steps have to be taken enabling the atoms $a\ b\ c$ to finally unite with $x\ y\ z$, the slow molecular building occurring during the intermediate stages as with constructing the embryo, which also induces the mother to sleep as nourishment is taken from her to the new organism, so it takes longer for her to recuperate. That sleep was a nutritive process I announced in 1892 and 1894.⁴ Plants undergo analogous resting processes.⁵ S. L. Clemens mentions shipwrecked starving sailors going without sleep for long periods, and in asylums the insane have gone incredible periods without sleeping, facts accounted for by the failure of nutritive processes.

Dreams are faultily associated memories, often suggested by some recent impression, dropping off bed clothes may cause a dream of being naked in the streets, odors may arouse some recollection supposed to have been forgotten. The new and the old events may be mixed up in dreams. Pleasant happenings during the day or good ventilation in the sleeping room may cause pleasant dreams, trouble during the day may, with bad air in the room at night, cause dreams of difficulty, though not necessarily having anything to do with recent affairs. Rather the reverse. Old folks often dream of their grown-up children as babies. An architect harassed by trying to make a hundred thousand dollars pay for a million-dollar structure may dream of steamboats sinking, difficult hill-climbing, and so on.

Nightmares are mere brain congestions. Healthy sleep like that of the infant should be dreamless, and is common to those who sleep out of doors, in trees or on the ground. Blind people do not have sight dreams if they have always been blind, and the same can be said of those always deaf that they do not dream in terms of hearing.

Arrogance is an animal trait cropping out in the comfortable house dog who barks at beggars, the court bailiff who puts on

⁴ Science, N. Y., Nov. 11, 1892; Journal of the American Medical Association, March 10, 1894.

⁵ Darwin, Power of Movement in Plants.

more airs than the judge, and the rich man who fancies his money entitles his opinion to respect when he is usually badly informed on the topics he so pompously discusses. Let him lose his money and his surprise that his ignorance is openly laughed at is instructive both to himself and students of psychology.

Deference is the opposite trait, shown by the poor man till he becomes rich also. Servants grow polite before the holidays. Cowardice and bravery are universal and are neither of them constantly associated with worthiness or unworthiness. A mean man may be brave and a generous one cowardly, but not necessarily. Self-defense is practiced by all animals and some plants.

Anger is next to fear as a widespread emotion. It is shown by animals with better defined reflexes but is often mixed with the fear feeling which preceded anger.

Revenge is desired most by less highly organized people. Its foolishness is seen by those furnished with the higher order of intelligence. Hatred and disgust are associated with stomach feelings, the expression "he makes me sick" indicating this. Rage is expressed by canine tooth exposure. Contempt is often vanity, superciliousness. Laughter is caused by a superiority feeling of triumph over others, as when one falls or is unfortunate, the inclination to laugh is ready, however ashamed we may be later, unless sympathy suppresses the ridicule.

Suspicion is a natural ingrained inheritance evident in hunted and persecuted persons. Insanity often brings this to the front as delusions of persecution. Extreme age may develop suspicion, because the intellect is degraded, allowing the animal instincts to appear, and this is true of other things than suspiciousness in some cases.

It is natural that the feeling of being hunted and persecuted should be associated with some forms of insanity when the organic memories of millions of years of our animal ancestry are bound up with such feelings, for they were chased, slaughtered, trapped, fought and otherwise persecuted constantly, and the sensation of care is a ceaseless feeling with most of the descendants of such beings, developing into fright or suspicion when the mind grows hazy.

Cruelty of animals, of children, adults, nations and of all ani-

mate nature is apparent on all sides. While the labors of such a man as Plimsoll to have the sailors humanely treated may occasionally be rewarded, most merciful measures have come about through evolution of adjusting to the lines of least resistance, to expediency, through fear of consequences of not respecting the rights of others. Even nature is cruel. A quiet landscape may have been the site of prowling fierceness and fleeing terror, and for millions of years witnessed the agony and death of victims. Ladies with feathered hats and furs, are not the less causes of cruelty because the feathers were artificially arranged by a milliner and the furs are nicely tanned. The Indian with the coarse skin of an animal over his loins and feathers in his hair is the not very far off originator of just such decoration, while vanity and cruelty combined are the instigators of that sort of apparel. Few of us care to see butchery done and yet we eat meat and enjoy it.

Sympathy is developed from the adjacency to suffering and to being able to mentally put ourselves in the place of the sufferer. When rich people are not in contact with poor they do not understand their needs, and when the poor grows rich he usually forgets his former neighbors. Elephants are used to decoy others, and the stock-yards decoy bull, sheep or hog leads the others to slaughter as the confidence man traps his victim into a bunco game.

Yet astonishingly good traits appear unexpectedly in war times, shipwreck or trouble. People to whom we were indifferent are revealed as sympathetic, but all too often opportunity in asylums and penitentiaries affords the brute instincts a longed-for chance for exercise in some attendant who was not suspected of being inhuman, and also the kindest of hearts are occasionally found in this same class of asylum employes, but if the atmosphere of the place is too political these well intentioned persons are liable to abuse and dismissal for protecting the helpless from brutality. Let such matters be better understood and institutions of the sort will become more humanely managed, just as seamen are nowadays seldom flogged and starved as they were commonly in the last century.

Unrestrained power degrades its possessor and some alienists speak of the insanity of power.

Maternal and paternal affection are common among animals, the first especially. The latter is more observable among man as a rather artificial article. The father being as a rule indifferent to his progeny in lower life, while the mother shows care, at least, while the young are helpless.

A persistent doing of good with the expectation of a heavenly reward and a disregard of the reward on this earth may become a habit and be intensified if long lines of descendants are taught the same thing until finally an instinct is created to which the last in the line cannot do violence; he may even find comfort in self-sacrifice, though an occasional person in this same line of descent may revert to the primitive utterly selfish stock. The other worldly incentive may finally be extinguished, and while religion no longer plays any part in the good deeds done the habit is firmly fixed and one may become automatically generous.

Gratitude is best seen in its purest form in the dog who is fed, and how the sentiment gradually fades as he ceases to be fed. A gift lays the recipient under an irksome sense of obligation. Some succeed in removing this from the memory, while the more vulgar seeks revenge for the unpleasant feeling. This is actually the experience of physicians who suffer abuse and detraction from those they have helped, because the patient sees no other way of getting rid of the unpleasant recollection of being indebted to the doctor. High intelligence may maintain gratitude.

The surprise one shows upon being made to suffer for doing what he regarded as a good deed proves that he has not foreseen consequences or has made improper associations of the relations of things, expecting, more likely, to be rewarded instead of punished, or at least not made to suffer. He may recall instances of bad deeds being rewarded and infer that it pays to do wrong and that it is inconvenient to do good. This again reveals the supposition that rewards and punishments are connected with deeds. With age he disassociates these matters. What is the use of being good if we are not punished for being bad? is a frequent query made without being aware of the confession it involves that goodness was only with expectation of reward.

The average novel concludes with things coming out all right, with rewards for merit and compensation for troubles, but

even those who are illiterate talk of such things and expect them. There is an expectation of reward for the most trifling sacrifice, if not here then hereafter. A settled conviction that doing good will pay, from training doubtless, being taught such things during the receptive period of childhood.

As to friendship Saadi remarks: "Lend money to the poor and ask it of the rich and they will trouble you no more." Another sage suggests that the holy bond of friendship lasts through a lifetime unless an attempt is made to borrow money. Too often friendship is taken advantage of or results, unintentionally, in suffering.

Conscience is the outcome of instruction and heredity combined. What we are taught we should do and should not do influences behavior and feelings, but when one loses an opportunity to cheat he may also suffer the same kind of remorse that the one does who has accidentally cheated someone. So it is all a matter of training and character, which in turn results from circumstances. It is the not having done the expedient thing that induces remorse, and it depends also upon what the person considers to be the most expedient.

A skye terrier stole a cutlet and in spite of hunger finally brought it back to its master, hung its head in shame and slunk away.⁶ Habit may become one of the greatest of instincts, actually reversing, in time, the most primary workings of animal nature. Curing a habit entails suffering, but the acquiring of a habit may be gradual, as that of contention in families. If the environment which first favored the acquisition of any trait persists with the descendants then acquired habits may finally become instinctive and be transmitted, for instance, in spite of the cruelty and rapacity of our earlier progenitors, the instruction of teachers, governesses and preachers, whether meant or not, with the constant inducements by rewards in heaven, there has been created a natural type of gentleman and lady utterly different from their forefathers.

Imitation is a general animal instinct from the very meanest up to the highest type of life. It is what enables progress through

⁶ American Naturalist, June, 1885, p. 621.

copying what has been found to be serviceable. Mimicry of animals and plants enables escape from enemies at times or more success in preying upon others. Hypocrisy is imitation and has its uses in the assuming to be better than in reality, a sort of deference to superiority, which in time may lead to the real superiority, if not by the hypocrite, at least by others.

Vanity is a prevalent animal instinct, as in the peacock and multitudes of other living things, up to the general who spends his leisure in planning new uniforms. Women are notoriously vain, and to decorate themselves with bright rocks, hides of wild beasts and plumage of birds vast mercantile combinations are stimulated, and colossal fortunes are piled up. Even the desire for fame is a species of vanity, but the student who learns to care nothing for appreciation is the most apt to secure it. What an ephemeral and worthless thing it is can be seen in the multitudes welcoming Admiral Dewey for his Spanish victories, and in a few weeks being influenced against him, for trivial reasons, by politicians who feared that he had presidential aspirations.

Pride is a different matter, and may be creditable in preserving self-respect, in spite of the worthless opinions of contemporaries.

Vanity renders us susceptible to flattery, of which fact the demagogue is fully aware, and his superciliousness is amusing when he no longer thinks he has need of obsequiousness. The low organized mind fancies it can discriminate where deference and arrogance can be distributed and is incessantly making mistakes. A step higher in intelligence develops the constantly polite person, but even he may, like the Spanish captain-general, have a cruel disposition. Vanity is independent of other traits, as some very estimable persons may be excessively vain, though in most cases only in their younger days. The seat of vanity is in the muscular consciousness. It leads to "philanthropy" in the desire to build monuments, as pyramids, colleges, etc. Holmes asks what is fame worth in a planet whose crust is fossils and whose centre is fire. Notoriety is often mistaken for fame. The Spaniard is the vainest with the least occasion for it. Detraction is the favorite method of attempting to pull down one who has claims to superiority.

Thackeray⁷ remarks that a ruffian like Henry VIII talked as gravely about the divine powers vested in him as if he had been an inspired prophet. A wretch like James I not only believed that he has in himself a particular sanctity, but other people believed him. He was a Scotch snob without courage, generosity, honesty or brains, but just read what the great divines and doctors of England wrote about him. Charles II, his grandson, was a rogue, but not a snob, whilst Louis XIV, his old square toes of a contemporary, the great worshiper of big-wiggery, has always struck me as a most undoubted and royal snob.

Speaking of "The Peerage," which lies upon so many drawing-room tables, he says: Considering the harm that foolish lying book does I would have all the copies of it burned, as the barber burned all Quixote's books of humbugging chivalry.

He asks: Why is the poor college servitor to wear that name and badge still? Because universities are the last places into which reform penetrates. Thackeray should have become familiar with insane asylums run by politicians. He further notes that the English snob rampant has no equal with such indomitable belief in himself, that sneers you down, and all the world besides, and has such insufferable, admirable, stupid contempt for all people but his own, nay, for all sets but his own. In England the dinner-giving snobs occupy a very important place in society.

As to jealousy:

"He who would free from malice end his days,
Must live obscure and never merit praise."⁸

Even a dog is jealous of its master's affection if turned to another dog. Envy may be justified or unjustified, as when a hypocrite claims to be what another may be who fails of recognition; in the other case an incompetent may envy the rewards of skill and merit. Lord Melbourne said he thanked God that in the Order of the Garter there was no question of "damned merit." Pestalozzi devoted his life to the welfare of children, but was impeded by the petty jealousy of the school director of Burgdorf. Dryden remarks:

⁷ The Book of Snobs.

⁸ Gay.

"And malice in all critics reigns so high
That for small errors they whole plays decry."

Imitation induces followers in detraction: "You have many enemies that know not why they are so, but, like to village curs, bark when their neighbors do."⁹ Both Lord Nelson and Admiral Schley were, a hundred years apart, hounded by jealous superiors, who tried to steal the credit for their victories, and such events are numberless in history.

Deceit in all its endless ramifications is a natural inheritance by all animals, and in some plants it appears evident. Nature has incessantly deluded and the truth has been hard to secure in all ages, particularly when man has often preferred to believe in the lie.

However strange it may appear to some, who are inclined to think otherwise, there is such a thing as nearly absolute honesty. An occasional person in a community cannot stoop to a dishonorable action, and we can readily refer such dispositions to training, whether by self or through others, or to heredity where training has resulted in a modification of descendants through persistent effect on lines of generations, and to habit, however the habit may have originated, and whatever may have been the incentive. Savages may be surprisingly honest, while others of their tribes are not. Dishonesty runs riot in civilized communities, while honesty is also unexpectedly found there. Paradoxical as it may seem, the utmost honesty in some particular may be associated with dishonesty in others. Scrupulosity with moral obtuseness. It is largely a matter of training, accepting ready made ideas on all such subjects.

A sincerely religious person is often honest, as he thinks it folly to be otherwise, since this world has no inducements compared to those of a future existence. It is merely a matter of common-sense with him that riches in this world are not to be compared to those of another world. Now imagine a head injury in such a person obliterating the memory of ideas on favorite topics, as the religious views which guide his actions, then the incentive to honesty being gone a complete inversion of character

⁹ Shakespeare.

may take place, merely due to the failure to recollect and therefore to be guided by such recollections.

Opportunity may tempt latent dishonesty that is common to all as an inheritance from our deceitful ancestry. Some people have better opportunities to steal than others, as lawyers, publishers and politicians; it is not because they are less honest than others that they avail themselves of their chances. In the case of bankers honesty is their capital, their stock in trade. It pays them to be honest until the big chance occurs, as with Alvord, the trusted teller of the First National Bank of New York, who, being so wholly trusted, stole six hundred thousand dollars. Plumbers, church and hospital treasurers also have good opportunities.

"Never to suspect evil is as fine as it is foolish," says Schopenhauer. The trouble is that the one who always looks for good in others is misplacing his regard and sees it where it does not exist, and overlooks it where it really is present.

Pirates and freebooters in early days were highly respected; nowadays they are merely disguised, and while we recognize the real thief under the disguise we accord him the same respect our ancestors had for Captain Kidd and Robin Hood. There may be honesty in one regard coupled with dishonesty in others. Merely a matter of training. Employes may be honest with an employer and both be dishonest with the public.

There is a French instance of unswerving integrity. Lieut. Col. Picquart, who has been called the grandest man in France. Honest, and with the courage of his convictions, with hordes of rascals like Mercier, the would-be assassin of Dreyfus and Labori, hounding and persecuting him, with rewards offered him for knavery, he persisted in telling the truth and redeemed the character of France.

Deceit has its disadvantages, for practiced upon others constantly it disables one from seeing the truth at all. Cynicism and the thinking of lies are among some of these disadvantages.

National dishonesty, in treaty breaking and grabbing of territory, is patriotically approved by both Church and State.

CHAPTER XV.

THE INTELLECTUAL FACULTIES.

Animals, including the primates, have the same senses, passions, affections and emotions generally, even the complex ones of jealousy, suspicion, emulation, gratitude and even magnanimity. They all practice deceit and are revengeful; some are susceptible to ridicule and have a sense of humor; they feel wonder and curiosity, exhibit the ability to imitate, to exert attention, deliberation, choice, memory, imagination; they associate ideas and have reasoning ability in varying degrees. There are differences between animals of the same kind as to intelligence, horses or dogs may be idiotic or sagacious. All animals are liable to insanity, and to many of the diseases common among men.

That animals develop in intelligence is proven by the fact that the young can be more readily caught than adults.

In Seton-Thompson's books he shows the kinship of man and animals. He tells of dignity and love, constancy in a wolf, sagacity in a crow, obedience in a partridge, fidelity in a dog, mother love in rabbits; the spanking of disobedient cubs by she-bears, bullyism in a coyote, the love of liberty in a mustang.

He says that "for the wild animal there is no such thing as a gentle decline in peaceful old age. Its life is spent at the front in line of battle, and as soon as its powers begin to wane in the least its enemies become too strong for it, it falls." When man drops out of his usual place he leaves his defences, particularly as age advances. He too is like the wild animal and the tramp—everyone neglects or is against him till he dies, and even in this civilized age the murder of a mere outcast is not inquired into.

The two wolves, this author mentions, who destroyed two hundred sheep in one night out of pure wantonness, are no worse than the county insane asylum employe who secured his place by political influence as a reward for ballot-box stuffing, who kicked in the ribs of an inoffensive helpless old dement because he could

safely do so. Any mention of such an incident in the newspapers fails to interest the public, as the reader concludes that the matter is mentioned by some "fool-reformer," or that it is sensationalism for political effect. A wealthy citizen attacked by burglars becomes the center of deep interest and sympathy.

There are grades of intelligence as between the pike who has to bump his nose many times against a glass before he finally learns that he cannot pass it, and the monkey or savage who learns from one experience.

Many birds have great curiosity as well as caution. Nor is it the only animal owning those instincts. Some animals are excessively clean, while Hindoos and some Spaniards are filthy.

Orangs have dispositions to fight like human roughs. The female carries its young precisely as do the coolies of India. They have human-like affections, satisfaction, pain, rage and pleasure. Many low races of men make no better homes than some of the higher apes do. Dr. Hayes says that his polar dogs recognized thin ice and separated widely so as not to be too heavy in one spot. Hozeau tells of dogs searching for water in low spots of ground as though they knew that water gathered in depressions. Lubbock taught his dog to read and smell words as out, tea, bone, water, food, printed on cards which the dog would bring as he wished to go out, to drink, to eat, etc.

Old Spanish and French painters sometimes have hallucinations; for they make points, at times, of imaginary game, and are subject to epilepsy.

Domestic dogs have improved upon their ancestry, the wolves and jackals, in affection, trustworthiness, temper and probably general intelligence. Horses have been known to seek the farrier and hold up the foot on which was a broken shoe. Intelligence is marked in beavers, ants, bees, and social crows are quick-witted.

Consciousness may conveniently be ranked as a mode of motion along with other physical forces, in spite of the prejudice against such a view by those who know little about chemistry or physics. It is connected with all mental acts usually; it is the form and condition of all knowledge, the awareness of things. Sleep, fainting, somnambulism and delirium make intervals be-

tween conscious states. It may oscillate from one thing to another and is subject to fatigue, being capable of becoming stronger, weaker or fresher by what one does. Proper regard for the circulation best accounts for the phenomena, as the vigor of consciousness depends on the blood flow. It is occupied with objects, whether internal or external. It is a brain function, a mode of molecular motion, inherent in all atoms apparently, but as cells unify the consciousness of atom and colonies of cells create the animal then the brain centralizes the colonial consciousness. The higher developed brain affording the better consciousness and conditions determine differences in acuteness of the faculty in all living things. Resistance increases consciousness and ease lessens it.

The usual objection to consciousness being a form of energy, such as heat, light, etc., is stated as consisting in consciousness being a thing apart and unassociated with the other forces, having nothing to do with matter in general and not being convertible into other forms of motion. The answers to this could be that :

The materials of the brain are necessary to consciousness. Destruction of parts of the brain destroy consciousness. When badly nourished consciousness is defective if intoxicated or too greatly nourished. If much blood is sent to the brain, consciousness is increased. If the blood is impure or lacks quantity consciousness is imperfect.

That consciousness intermits, comes and goes, is paralleled by heat being latent and other forces also, the one being converted into the other as lightning (electricity) is produced by heat accumulation, the one being produced by conversion from the other.

Herzen's dictum that consciousness is inversely as facility of reflex and directly as effort shows the association of all forces from consciousness to molar. Tentatively the assumption may be made that a conscious act is the immediate and direct conversion of consciousness into motion of the animal and the motions of the animal, including the chemical movements in the brain, are what arouse and constitute consciousness.

The stoppage of the mechanical movement of the heart causes

the loss of consciousness by its organ withdrawing the materials for its continuance.

Consciousness gradually develops from infancy to the period of life when the faculties are at their best. It fades with senility and disease. It gradually rouses as the senses clear after sleep, and is best in proportion to sense acuteness, vigor, good blood supply in the brain and after proper rest.

You are conscious of your body and even of your clothing—self-consciousness. You learn by a looking-glass and what others say to you about yourself, and these sense impressions you accept as making up your self-consciousness, and you may according to circumstances have most erroneous opinions on this as on other subjects. A prince may be persistently flattered and feel conscious of abilities and features he does not possess. It is another instance of the deceit of the senses.

Change your silks and broadcloth for rags and your consciousness undergoes adjustment to the change; pride is replaced by humility, the peacock feels as the worm might be supposed to if aware of his limitations.

It was Jouffroy who held that we know our body only objectively as an extended solid mass, similar to other bodies of the universe outside the ego and foreign to the perceiving subject, exactly as we know our table or mantelpiece. This is called self-consciousness.

When we grow accustomed to impressions so that they lose their former effect a readjustment of the parts concerned in the impression must have occurred, a diffusion of the vibrations into other and more general channels takes place. Muscles visibly adapt themselves to new demands by growth so that what originally may have required severe conscious effort can be unconsciously and easily performed. Nerves are no exception to the rule of tissue increase by exercise. The miller becomes habituated to the noise of machinery and sleeps undisturbed by it. The rustic excited by city noises may become accustomed to them in time, and returning to the quiet of the country be disturbed by it.

An idea of the method by which the brain may receive impressions can be gained from observation of the process of tele-

graphing. The clicks which make the dots and dashes of the Morse code when grouped in certain ways stand for letters; thus two dots mean i, three dots mean s, four dots mean h, one dash means t, two dashes mean m, three dashes five, and so on. By practice the words formed by these combined clicks are understood as readily as speech. An operator may be fast asleep, and paying no attention to the clicking of his instrument; the moment his call is sounded the peculiar grouping of the clicks will awaken him at once, as readily as though his name had been called.¹

Perception conveys the idea of a sense impression in connection with memory of past experiences, and apperception is essentially the same thing as the union of a new with past impressions. Apprehension is practically awareness.

Memory consists of memories divided into what has been stored up in the brain cells by the senses of sight, hearing, etc., so memory has no special seat but several seats. There can be no sympathy, joy or grief when memory of what relates to those sentiments has been taken away. For example, an injury to the visual centre in the brain made a patient unable to recall the face of a friend who he heard was dead, but he was surprised to find that he had no sorrow when told of the loss of his friend, simply because, as far as sight was concerned, he could not recall him.

The receptivity of the young for memorizing as compared with that of the old person is in the ratio of the chemical integrity of the brain materials, the plastic developing youthful brain registers easily and retains what the denser less yielding structures of age fail to record, and calcification or other change included under hardening may be observed to be a senile method of involution.

The events of youth are much more readily recalled, and as we grow older recent happenings do not impress us so that we can as readily remember them, and an explanation of this could be that in youth first occurrences make profounder impressions upon the sensorium according to the childish estimate of their importance, and later in life as we improve in our judgment mat-

¹ Studies in Telegraphic Language, W. L. Bryan and N. Harter, Psychological Review, 1897, p. 27.

ters which previously seemed unimportant assume new aspects and may impress us enough to cause them to be recalled from this later date. A vast range of happenings we gradually drop from memory as useless to us to retain, though practically they are still in the recollection for mere reminder suffices to cause them to be recognized, but consciousness is habituated to them and their recurrence is unnoticed through the rule that consciousness is concerned more in the unfamiliar and that which necessitates effort, the blood being consumed more at the points of such activity in the brain; these events that pass day by day through familiarity we disregard, and as age routinizes life the automatic responses to daily needs leave the mind unengaged by comparatively trivial things, and there is more time and inclination for exercise of higher intelligence based upon retention of what are really important affairs or what the experience, habits, education and circumstances cause him to regard as important. So as life is measured by events the first part is the longer, and as so few new things seem to happen in age that period is apparently shorter; further the perceptions in youth are exercised in looking for new sensations, and hence life seems full of experiences then, whereas age is reminiscent and ponders past matters while more obtuse or indifferent to the present. Then with a well-stored brain solitude is not so irksome as it is to the superficial or undeveloped. Time hangs heavily upon the idle-minded, while attention and interest cause time to pass swiftly.

Association of events occurs in the mind through seeing, hearing, etc., them together, whether such things have any relation to each other or not, and this accounts for the mysterious and provoking recalling to our minds of things, and we cannot account for why they should have come back to us at that time. It is simply because we cannot help learning two or more things at the same time. Animals and savages often maintain the original multiple impression as children do. As the trees and grass wave and a storm follows, hence these crude intellects conclude that the wind and storm are caused by the grass and trees. It is a common savage supposition due to this association. A gambler loses at cards and recalls that he met a cross-eyed man that day who must have caused his losses. The sight of a rose

may recall its odor, or its smell may bring the flavor to memory. Even the thought of a lemon may make saliva flow. Many instructive movements have associated impressions in memory for their causes. When the sexes are not appareled as usual the unsuitable dress changes regard for them, the customary association is disturbed. Lingerie attracts the eye where bloomers disgust. A modern bonnet on a statue of Venus appears ludicrous and incongruous. Mental suggestion is a form of association. False association is a mighty influence in human error, and occurs in dreams, delusions, superstitions, ignorance. Cause and effect are constantly misplaced.

Imagination is an exercise of memory association, by which resemblances and unlikenesses are grouped. Childhood is full of fancy, and it requires long experience and a better fund of memorized facts before imagination can be properly curbed and made useful. Dogs, cats, horses, birds have vivid dreams, hence they have imagination.

Appreciation of beauty exists in butterflies, fishes, reptiles, birds and mammals as they are attracted by colors and symmetry of form in their mating, and this is an associative and imaginative exercise.

Attention may be reflex or involuntary, but it is thereby that curiosity is exercised and learning made possible. A cat watching a mouse hole is an instance of absorbed attention, so intense that one may approach unawares. Similarly in man the absorption may be such an extreme as to shut out sense impressions for other matters, due, in my opinion, to the nutrient reflexes being engaged in supplying more blood to the brain centres exercised, at the expense of contiguous or distant centres, rendering them less acute.

Curiosity is the desire to know, and is clearly associated with attention. Some dogs are more attentive than others, or even than some monkeys, but attention increases in the scale of intelligence.

Interest is an associated condition of attention, and may make studies delightful.

Compared with other mental acts volition is quite simple. It is simply the final act which gives effectiveness to choice or which

realizes the object of choice. Unless we make it cover every impulse or decision of the will from attention to choice it will only denote the final initiating force of physical movement, the external result of will leading to the realization of desire. The consciousness of an end or purpose is included and the executive fiat. The will may be considered relatively free and also relatively bound, but as everything has an antecedent cause the will is absolutely not free, and may be regarded as merely the strongest impulse, the acts performed being due to a resultant of forces in which consciousness may or may not participate. Will power is dependent on health largely and is merely a physical manifestation. Anything that debilitates and irritates, such as severe pruritus, a grief or other distraction, may place will power at a disadvantage, but after all such things are merely part of what will determine will power.

The will power is weakened or destroyed or perverted by alcohol, through its deranging the inner mechanism and substituting unhealthy for healthy impulses. Aboulia, or will paralysis, and the other extreme of obstinacy, show that will power is co-ordination and impulse, either failing to express results or exerted improperly and too much.

In the insanity of doubt the vaso motor irregular action may be conceived as occurring in certain centres between the reception of the sensory and the selection of the efferent outgoing motor impulse, the blood oscillating, instead of going direct to the part concerned in the usual motor projection impulse, may easily cause the vacillation. Stimulants have also disposed of this trouble, but it is inadvisable to rely upon them, for they substitute pernicious for the erratic action.

In imitated insanity as *folie à doux* the weak mind is the main factor, such persons are organically defective. The weak will of the imbecile is well known; there is force lacking.

Thought regards the relation between things and events. Apprehension regards facts and thought their relations. Discrimination involves attention, selection and perception of differences. It is analysis.

Abstraction concentrates upon certain qualities and neglects others. Comparison and generalization results. Concrete refers

to wholes. Reason or reflection utilizes the memories of events.

Induction is the hypothetical process of reasoning, leading up to conclusions, examining facts and making temporary inferences until better ones can be made.

Belief does not mean faith, but both may come before knowledge, as conviction before proof. Faith trusts with or without reason, belief accepts or assents without proof. Belief may be founded on testimony and trust in a person, or on induction, so it may represent the probable in various degrees, but a belief is never by itself proof of anything except that the person is convinced, even if he die for his belief. Doubt suspends judgment for want of evidence. Science teaches us that it is not necessary to have opinions in all cases. We may with great advantage leave our conclusions a "scientific blank." It is the most ignorant who always has an infallible opinion on every subject, particularly if rich or powerful enough to force his ideas upon others.

Ideas in the world's history have survived through their natural selection, such ideas as were fittest to persist by reason of the receptivity of the people for them, have prevailed and flourished, sometimes a foolish lying idea might be the best suited to spread and be enthusiastically believed in. When the Arabs were ripe for Mohammed's teachings they gulped them and fought to sustain them. Many an idea has been forced upon people by the sword, and the next generation would not understand how the world could have ever thought differently.

Imitation plays a strong role in propagating modes of thought which the masses unthinkingly or unreasoningly take for granted as correct, and, everywhere, what the children are taught in early life, no matter how silly it may be, throughout life remains as a fixed influence controlling the acts of the adult with occasional rare instances of overcoming such bondage by individual reflection or change of environment, seldom through the development of reasoning power alone without external aid, but so strong may this tendency become in a few instances that older training when erroneous has given way to reasoned out recognition of its absurdity, and, on the other hand, good influences have also been negated by a bad life.

Reason, according to Herbert Spencer, affords no gap be-

tween it and instinct, for rational actions pass into instinctive and arise from instinctive when too complex. The human brain is an organized register of infinitely numerous experiences received during the evolution of life, or of that series of organisms through which the human organism has been reached. Then it is that faculties unknown to some lower races, as musical ability, become congenital, or are born into the higher ones.

There is wide variance in the ways in which people think, according to age, station in life, means of support, anxieties and thousands of other influences, to say nothing of the degree of development of the brain. There are, however, certain almost invariable methods of thought resulting from commonly found conditions, such as the humility of poverty, the arrogance of riches (with exceptions of course, I merely said almost invariable). A greater development of mind in the poverty-stricken and the wealthy would raise the spirits of the one and tend to humiliate the other in realizing that there is something in Emerson's "law of compensations." The poor man would realize that he is nearer nature and can rely on whatever friend he makes. The rich man would see how he has surrounded himself with those who would surely desert him if he lost his means; he would know how sycophants, intriguers, quacks, shysters, swindlers and hypocrites are attracted to him as the carrion attracts buzzards. Unable to separate the true from the false were he to develop intellect enough to do so, he would be appalled at the results of his being rich, and despise the fawners and flatterers who in his previous mental state he regarded as his best friends, and would cultivate an entirely different class of neighbors whom previously he looked upon with indifference or disdain. Greedy heirs do not wait upon the poor man, anxious for him to die; if people call upon him it is not so often with some design.

The impossibility of awakening the public to an advanced idea of its highest interests is shown time and again. The eager reformer can demonstrate that much good to the community and to individuals will flow from a certain line of action, but the populace is busy with its bread-winning, and turns deaf ears to pleadings for concerted action in things it fancies but remotely affects them, or likely enough hearken more readily to designing

and ignorant bigots who oppose advanced ideas.

Harvey's theory of the circulation of the blood, though established by the most convincing proofs, was not generally received during his life-time, and his practice was hurt by its publication. Sir Charles Bell lost many consultations when he published a little book on the mechanism of the human hand.

In the State of New York asylums for the chronic insane were found to be pernicious and were abandoned because the politicians availed themselves of the better opportunities they afforded to rob the helpless; "anything was good enough for the incurables," and the expense to the other asylums was increased by taking away demented who could labor. But the Illinois politicians induced a "woman's club" in Peoria to start a petition to have an asylum there for the incurable insane, and one was built in spite of the records against such a system.

Tasmanians have no words to express qualities such as our words hard or tall, but have to resort to comparisons "like a stone," or "long legs." As mental powers develop the language becomes less pictorial and more abstract, and thought evolution is thereby quickened, but it is a question if this change of terms does not still accompany the same old methods of thought, comparison, for we may say hard and yet think "like a stone," and tall is still long legs in our thoughts. The Tasmanians name particular varieties of trees, but have no name for tree. The red men have no general term for oak-tree, the different varieties being named. According to the needs of peoples apparent generalizations may grow, but they are really concrete in all cases. Generalizing is more a memory widening, filling it with more pictures of similar things classed under one prominent type which stands for all.

The capable lawyer, before trying a suit at law, will study the environment all he can; he prefers to know the judge, the lawyers, the jury, and even get a glance at the court-room before beginning, for all these details count in the result. And a lecturer will consider to whom he is speaking. The tactless will write or lecture or plead without regard to the requirements or the fitness of things, and this sort of absence of foresight reacts upon one's efforts.

Small official minds delight in embarrassing operations of a government department by some, far-reaching ruling that will inconvenience thousands and cause vast sums of money to be lost, and all wholly unnecessary, merely to show authority, as the peacock flaunts his tail. For weeks there was an instruction to the effect that writing "printed matter only" on the outside of a newspaper or book to be mailed placed it among written communications liable to full letter postage. The insurrection this ruling caused ended in its speedy abolition, but lilliput intellects are busy with similar interferences, fearful that their originators may not attract attention.

"Knowledge is power and wealth" is an old saw, and its verity depends largely on who has the knowledge and what kind it is, and what one considers wealth, for the greatest knowledge attained may induce its possessor to abstain from either power or wealth, as usually understood, the knowledge alone being the greatest wealth and conferring happiness that completes the desires of life.

Judgment cannot be a faculty, it can only be a condition of different faculties and good or bad, according to the states of the faculties. Nevertheless it appears to be a general condition developed in some and more or less absent in others. It does not appear in any animals or man until a certain accumulation of facts is made which requires a stage of development beyond youth. Usually it is better in the aged person and poor in the child. Some develop it earlier than others, and it varies greatly in individuals. It is the same as inference, deduction and logic. It is arrived at by a process of induction from the accumulation of facts registered in the brain during a lifetime. Something may interfere with the full exercise of all the judgment of which a person is capable, and hence an expression of judgment may be erroneous or insufficient through only a portion of the facts being used in an inference.

An instance of judgment exercise may be seen in the case of an old general with much experience and reading advising the younger officers in his command against a certain rash movement. He recollects the disadvantages from similar moves, and

therefore judgment depends largely upon memory and ability to make comparisons (reasoning) more or less promptly.

The reason why the judgment of a man of sixty years is ripe is because by that time he is most apt to be free from thousands of previous false views; his accumulation of experience enable his comparisons to be more accurate, and hence he sees life more nearly as it really is, and can infer better in consequence. The natural conservatism, however, may deter the old man from a venture in which the recklessness of youth might succeed, but the counsel of the old is safer in the end.

Ignorance, bias or prejudging are matters so related that, for our purposes they may be readily included in a consideration of prejudice, formed from pre and judice, and one of the few words that well convey their meaning. Knowledge is relative, no one has adequate information on all subjects. Some are more ignorant than others, but the most ignorant of all is the one who is too ignorant to know how ignorant he is. One may be well informed in certain lines, say of business, or of a profession, and have the reputation of being intelligent and well educated. Alas! along comes a sharper, skilled in other lines than those with which the "intelligent, well educated man," is familiar, and he is swindled. He may even gulp body-destroying and mind-debauching morphine, cocaine, and acetanilid medicines, because they were advertized by unscrupulous quacks, and as for "spiritual" matters, what will not the "intelligent, well educated" person believe in?

Nations may be prejudiced against one another through mutual ignorance, existing for generations. Creeds and political parties provoke misunderstandings which, as time elapses, appear absurd. When one is brought up to believe a party, a nation, or a religion, to be radically wrong the childish inference is also made that everyone connected therewith is bad. To realize that "no man or measure is ever wholly right or wholly wrong" requires a thoughtfulness and experiences more than those of the average adult.

The most learned is often unable to buy books. So the means of obtaining judgment do not ensure it in all cases, obviously so when we see so many dunces graduating from universities. The

quantity of acquirement does not measure the quantity of insight, nor do wisdom and information vary together. When facts are unorganized knowledge is a burden.

One great difficulty in weighing evidence and drawing inferences from the simplest array of facts comes from the easily observed failure of listeners to retain in their minds the first parts of a lesson or discourse before they reach the last parts, and so they do not connect, associate or group the different parts, though they admit the truth of each statement. Reviewers, even if they take the trouble to cut the leaves or to try to understand a book, which is not too often, usually state things unfairly through inability to grasp matters in all their relations. Holmes spoke of critics as being made from chips left over from the making of authors.

The untrained constantly pervert evidence by putting down as perceived what is merely conclusion. They are often unable to tell the objective from the subjective, what they have seen or heard from what they have merely thought.

Excited feelings make us wrongly estimate probabilities and destroy our view of relative importance.

Holmes defined a pseudo-science, such as phrenology, "as a nomenclature with self-adjusting arrangements by which all positive evidence, or such as favors its doctrines, is admitted and all negative evidence, or such as tells against it is excluded. It is invariably connected with some lucrative practical application. Its professors and practitioners are usually shrewd people; they are very serious with the public, but wink and laugh a great deal among themselves. The believing multitudes consist of women of both sexes, poetical optimists, people who always get cheated in buying horses, philanthropists who insist on hurrying the millennium and others of this class, here and there a clergyman, least frequently a lawyer, very rarely a physician, and almost never a horse jockey or a member of the detective police. A pseudo-science does not necessarily consist wholly of lies, and it may contain many truths, and even valuable ones. The rottenest bank starts with a little specie. It puts out a thousand promises to pay on the strength of a single dollar, but the dollar is very commonly a good one."

As to the outcry against demolishing idols of any kind, whether of pseudo-sciences or of a superstition, Holmes goes on to say: "There isn't a thing that was ever said or done in Boston, from pitching the tea overboard to the last ecclesiastical lie it tore into tatters and flung into the dock, that wasn't thought indelicate by some fool or tyrant or bigot, and all the entrails of commercial and spiritual conservatism are twisted into colics as often as the revolutionary brain of ours has a fit of thinking come over it."

The disposition of those who play upon the emotions and demand recognition as an authority on all subjects is noted in the remark by Holmes, that: "John Wesley meddled with medicines, as many other ministers have done, sometimes well and sometimes ill, owing to their very loose way of admitting evidence as seen in their certificates to patent medicines."

Carlyle holds that popular opinion is the greatest lie on earth. While this is a too hasty summing up, it can be truthfully said that it is very often superficial.

The attention of the world was directed toward the Dreyfus case, and the indignation aroused indicated how very little idea there was extant that millions of even worse conspiracies had succeeded, and history often was in the dark concerning them, or condemned the innocent and applauded the guilty.

John Fiske,² speaking of the persecuting spirit not yet having ceased to influence men's actions, says that it is no longer regarded as a trait to be proud of, but seeks to hide itself under specious disguises. Its manifestations, too, have become correspondingly feeble. The heretic who once would have been racked, thumb-screwed and burned for writing an obnoxious life of Jesus is now only requested to resign his professorship in the college de France, while nobody thinks of confiscating the book or cutting off from the author his share of the proceeds of its immense sale. The decline of persecution is in these respects analogous to the simultaneous decline in the warlike spirit. Warfare, once regarded as the only fitting occupation for well-bred men, has come to be looked upon not only as an intolerable nuisance, but even as a criminal business, save when justified on the ground of

² Excursions of An Evolutionist, p. 212.

self-defence. And along with the former slaughter of captives it is now unfair to kill chickens of an enemy's country without at least professing to pay for them. There are improvements in the way people think and feel. Buckle claimed the race had not improved morally but intellectually; he thought this progress was due to increase in knowledge and not at all to improvement in ethical feeling. He notes that religious persecution has been the product of some of the best impulses of human nature when guided by an erroneous theory of duty. The wretched Commodus cared nothing for religion, but Marcus had the interest of religion uppermost, and in spite of a humane disposition used violence to suppress the heresy of Christianity. The possession of an exclusive dogma of salvation makes persecutors. If you have sole ownership of the right to heaven it is a kindness to torture or even kill your neighbor to save his soul.

The sword is no longer in the equipment of a gentleman, private warfare is no longer allowed, the duel is less in favor and the sportsman is being hedged with rules. A sort of feminine softness is coming over the people as they shrink from the disagreeable. He is so merciful to himself that he could not bear to hear of an insane person being kicked to death in an asylum, and hopes some one will do something about it. He even shrinks from seeing cattle slaughtered by the butcher, but his imagination is not exercised in vain regrets when he eats what the butcher has killed for him.

The slave-making desire is observable in the attempt to domineer over persons intellectually in asserting the correctness of one's own opinion over all others'. Children squabble over questions of no consequence and warm into calling each other hard names, and finally pound each other.

We may safely infer from the tenacity of the ignorant to whatever notion it may have acquired as the only correct one, and his readiness to destroy you for doubting that opinion, that lowly organized men whether aborigines, savages, Russian moujiks, Spanish peasantry, or the uninformed in the neglected parts of great cities have an inborn, inherited disposition to act upon their convictions, however obtained, and to resent any attempt to call such convictions into question. From this it may be seen

how priestcraft and demagoguery work so successfully; either the opinions are instilled beforehand and adroitly made use of by the designing or they are hammered into the passive people incapable of thinking for themselves. In either event the tribe, band, society, church, etc., may fight to maintain whatever opinion is adopted, and dislike opponents as the savage does, and for identical reasons. His conceit is wounded by any intimation that he is not a god. Even the scientific man flushes with resentment when his pet theories are scoffed at. He has been known to resort to revenge upon his adversary for refusing to quote him. A compiler of medical works went over a revision of a large periodically published volume and carefully expunged the names of all confreres who refused to worship at his shrine and laud him for abilities he did not possess.

A man with small knowledge of chemistry found gold with antimony and concluded that the antimony had been converted into gold. He advertised to sell stock in his process to enable him to buy antimony, and finally fled when he discovered his error. Any chemist could have told him of his mistake, but he would not listen to one, nor did the stockholders think of consulting a chemist before investing. If his claim was a fact and his process the correct one gold could have been manufactured.

But even those who spend a lifetime in the study of a subject may overlook some important fact or show bad judgment. The crude mind on this becoming known jumps to the conclusion that there is nothing in science. Experts sometimes lie, and the average juryman thinks therefore that all experts do so, and it would be best to have ignorance only to trust. Ignorance is most often as untrustworthy, and the cause of expert lying in the court is not traced to its real source, the fact that liars mainly are the fittest to survive in such service because the lawyers, the judge and the law proceedings suppress truth, all too often, the witness is sworn to tell "the truth, the whole truth and nothing but the truth," and forthwith the lawyers on both sides extract from him only what colors their particular side and prevent him from telling the whole truth and the judge sustains their methods and would fine the witness for contempt or send him to jail if he in-

sisted upon telling the whole truth. And lawyers do not always care to have a too truthful witness.

Life itself may be said to be a process of problem solving, and the more logically the body adapts itself to the environment the better the health and happiness, and if the brain is developed to enable the better adjustment then that organ but continues the process that the body of the lowest organism more or less imperfectly attempts. Nature defeats the solution of the life problem by death, so the best solution possible is the possible one for the highest developed brain to do the best it can with life. And various are the interpretations of this from living wholly for one's self to living wholly for others. The logic of life is compound, as the conditions are so many and so complex; no set of syllogisms can serve as the logic of life. The body assumes that an article is fit to eat and a mistake may cost sickness or loss of life, so it has to secure true premises in such matters, for the second and third terms will be impossible, for instance: poison is assumed as good to eat, arsenic is poison and the rat ate some. If the rat had time to draw any inference it would be that he was mistaken in his premise. The fact of the matter is the best part of logic is in securing truthful data to start with, and all the other processes can pretty well take care of themselves. Science or the better knowledge of things affords the best means of securing correct premises, in spite of so many methods being false sciences.

Induction, deduction and consistency have all a basis of fact or they are worthless.

The brain is most often a wretched problem solver, for it too often puts the cart before the horse. A sudden emotion is stirred and consciousness becomes aware of it, and the mind inverts the order.

Belief is often absurdly considered to be proof. The senile dement believes in the scoundrel who robs him, the betrayed woman believed in her betrayer, the man who believed the gun was not loaded blew his brains out. Spain believed it could whip America, the Mohammedans believe they will convert and control the earth.

Conditions are incessantly being mistaken for things. That is

when a man jumps, the jump as well as the man is considered to be a solid tangible affair. It is difficult for people to realize that sound, heat, light, electricity, motion in general, taste, smell, touch, gravity, chemical power and so on, are mere jumps, that modes of motion are not things but conditions of things. When this sort of elementary physics once gets into the brains of biologists, doctors, philosophers and others they have taken great strides toward knowing a little about the universe. As people do not know the horse from the kick, they have trouble in correct reasoning.

The subject-matter of logic is no part of a logical system; that is, the things dealt with are merely the materials used for the time being by the system. Logic may be regarded as the simple reasoning process by which we pass from truth to truth, already found, and by which we guard against false arguments in such a passage. It has nothing to do with words but the arrangement of words into propositions and arguments; not with their meanings, but with the process of reasoning or passing from two known and acknowledged judgments to a third which is derived from their combination.

It is argued that since men reason, and reason well, without rules and without knowing the process, that a system of rules must be unnecessary. Many children speak with correctness and precision before they have any knowledge of grammar, and there are persons with wonderful arithmetical ability who have never learned arithmetic; good musicians who do not know the notes, but grammar, arithmetic and musical rules are not to be condemned because there are a few who do not need them.

"Many persons of clear perceptive faculties, and who form and combine their judgments rapidly, may reason acutely and well without a system of rules, but in order to be certain of their correctness others must have some invariable test; on the other hand there are many of quick but erratic minds who reason with such dangerous sophistry that the most delicate logical tests can expose the fallacy of which, indeed, they may not themselves be entirely aware. As such delicate tests have not been within the reach of the multitude it is thus that men have become, for want of popular knowledge of logic, at once self-deceivers, and deluders of

mankind, have established illogical religious creeds, monstrous social fallacies, false theories of government, which are immediately made manifest by the simple application of logic."³

The bias of prejudice, distortion of passion, or insidious temptation into error, swaying of self-interest, partisanship, fashion, imagination, cause ordinarily clear minds to draw different conclusions from the same premises. At different periods of life men will reason differently, so it is evident that natural logic is an insufficient guide to reason. But by observing all these things that influence reason and trying to conceal them enables us to avoid much false reasoning.

There can be but one kind of logic applicable to all matters; thus a good mathematician applies logic to the investigation of numbers and quality, a good general logically grasps a situation, etc.

Methods of investigation are by analysis, taking apart, or synthesis, putting together. In studying nature we first describe things, and then experiment with them, to see what things do; these stages are called the descriptive and the inductive; then follows the deductive or exact stage, that of devising some sort of conclusion or opinion with regard to things and what they do.

When we learn about things the next step is to collect them and their workings into general laws, and deduce from these things and how they behave further instances, or consequences, or predictions; this process is the descriptive, inductive and deductive.

One logician demands that we believe nothing without proof, which is a safe enough rule if we could always prove things. Many things we have to take on trust from statements of others, and we do not always find our confidence misplaced, but we can make a distinction between direct and indirect testimony and belief founded on satisfactory evidence or on mere hearsay.

The avoidance of ambiguity is one of the most important rules of logic. Be sure you understand your subject before you can expect to make clear inferences from it. Never use a word you do not fully understand and avoid those likely to mislead. If you get into the bamboozling habit and are content to merely appear

³ Elements of Logic, Henry Copée.

to know things you will end by cheating yourself, blinding your reason and by thinking lies.

Reasoning consists in the combination of two known judgments to form a third, and when expressed in language is called argument.

The simplest form of argument is the syllogism, but in an extended sense reasoning combines many arguments.

An essential definition presents the principal parts of the essence of the thing defined, as a steamboat is something that consists of hull, engine, etc., this being a physical essential definition, the logical essential definition would be the genus as an ocean-vessel and differentiation of peculiar build.

A nominal definition gives the meaning of the term telescope to view far off, photograph a picture made by light.

A real definition would require a treatise of description of what is to be defined.

As words are only symbols having no exact equivalents in phenomena, it is evident that a precise definition is impossible, only approximate definitions can be constructed. Any definition is assailable, and vast labor and time has been wasted in attempts to define such things as sanity, insanity, sickness, health, etc.

A definition should seek clearness, adequacy, sufficiency of words.

Physical division is separation into parts as an oak into trunk, branches, and those into bark, leaves, etc. Logical division separates genus into species and these into individuals. Mankind can be divided into races, creeds, nations.

A fallacy is an invalid argument which appears at first sight to be valid. If used with intent to deceive the fallacy is a sophism.

There are fallacies in *dictione* and *extra dictionem*, fallacies of form or diction and in the subject matter.

Material or non-logical fallacies arise from the ambiguity of words, and are therefore called verbal fallacies, and that very designation is capable of misunderstanding between fallacies of materials and a fallacy that is important or material. Formal fallacies are undistributed middle terms, illicit process of either term, negative premises, affirmative conclusions from negative

premises, or vice versa, more than those terms in the argument.

Material or informal fallacies have conclusions that are correct from the premises, but the ambiguity or falsity of the materials dealt with in the premises and conclusions is to blame for these kind of fallacies.

The simplest division of material fallacies are into those having errors in the premises or in the conclusions.

Errors in the premises are technically named the *petitio principii*, or begging the question; arguing in a circle; *non causa pro causa*, or the assignment of a false or undue cause. These branch into minor divisions. All these grow out of false or undue assumption of premises; they are akin to each other, and are often confused.

I. *Petitio principii*: Using the same fact, in other words to support a conclusion, as morphine causes sleep because it is a narcotic, equal to saying that morphine causes sleep because it causes sleep. Languages with many synonyms abound in this fallacy.

II. Arguing in a circle is finding a premise to prove an asserted conclusion, and then when asked for proof, trying to make the conclusion prove the premise, or increasing the circle by a third proposition which depends upon the conclusion, and juggling with these as with balls, one of which is in the air, but which it is difficult to tell. Working out the syllogism detects the fallacy.

Mohammed's revelations are true.

The Koran is Mohammed's revelation.

Therefore the Koran is true.

III. *Non causa pro causa*: Here the reason or cause asserted in the premises have nothing to do with the conclusion. Assigning a cause when it is not, and secondly, the assumed premises cannot be proven to be true as a cause, and may therefore be considered false.

"Think you not," said Charles II. to Milton, "that the crime which you committed against my father must have been very great, seeing that heaven has seen fit to punish it by such severe loss as that which you have sustained?" "Nay, sire," Milton replied, "if my crime on that account be adjudged great, how much

greater must have been the criminality of your father, seeing that I have only lost my eyes, but he his head?"

Eclipses are regarded by the ignorant as portending war and famine, and when they happen to come together they are related as cause and effect. This is the *post hoc ergo propter hoc* fallacy that besets undisciplined minds and induces them to ascribe a cure to a patent medicine when they know nothing of diseases, cures or remedies.

Errors may lie in the conclusion, as Alfred the Great was a scholar because he founded the University of Oxford, when all that could be affirmed would be that he was a patron of learning.

Polemics contain much of this self-deceiving and deceiving others. A species of this is the *argumentum ad hominem* or the unfair appeal to personal opinions or to one's vanity or prejudice. The argument may close with "Well, you would not do so!" The *argumentum ad populum* is the appeal to popular prejudice. Demagogues use this fallacy constantly, and where the sophistry is evident to an educated mind the mob is delighted with its unreasonableness. Revolutions often proceed on these lines. A third kind of irrelevant conclusion is the *argumentum ad verecundiam* or appeal to the modesty of our opponent, hoping that he will not attack respected authorities and time-honored customs, enabling conservatism to become gross, obstinate error.

Sterne suggests also the *argumentum ad baculum* or argument of the club, in "Tristram Shandy," and a ferociously powerful argument it has been in the world. It has torn down and established nations and, as Darwin says, it has instituted such things as virtue.

Appeals to the nature of the thing itself and to individual judgment are legitimate, but changing the point in dispute is an argumentative trick and some contest may resolve itself into proving something that no one has denied.

The fallacy of objections consists in asserting, for example, that since there are objections to science, that science is false. Irrelevant conclusions are the standing sophisms of debate and legislative contest. One person will wander about in a discussion, another will lose the point in question, another is taken up with little details with no bearing on the subject, and a third mistakes

the fine and delicate points of the argument, some become angry and lose reason and temper together, or overpowered by the truth and logic opponents, appeals to prejudices and interests of their audience; others resort to ridicule of the person or cause. The master mind seeks to bring things back to the main issue and to confine them there.

Verbal fallacies—ambiguous or equivocal meanings of words—a line for instance is a cord, a few words, a military term; a porter is a drink and a gate-keeper.

I. Etymology. Words change in their meanings from one period to another.

II. Fallacy of Interrogations. Using two or more terms in a question that requires two distinct answers, the ambiguity being in the single answer. One question implies another. Thus a temperate man may be asked when he gave up drinking, implies that he drank. It is called fallacia plurimum interrogationum, is made more subtle by the number and closeness of resemblance of the points included in the sentence.

III. Amphibolous Sentences. The ambiguity lies in the construction, so that by different punctuations we have double and opposite meanings. The Delphian oracles cultivated this knavery, so that whatever happened they could claim to have predicted it.

The wicked flee when no man pursueth, but the righteous is as brave as a lion, has been remodeled by placing commas after the words flee, and righteous, omitting the one after pursueth and changing flee to flea.

Tossing meanings from one sentence or word to another is amphibolous.

Words may have two or more meanings by resemblance, ambiguity, analogy, association, ellipsis, accident, as dove-tail, arm-chair, sweet sound, good shot (as a person or article or effect), we speak of Scott when we mean his works or his person. The word light is opposed to heavy and dark and may in conduct be applied to the opposite of serious or dignified. Ambiguity may lie in the context. Playing upon the words nothing and nowhere used as adjectives enable another fallacy of composition.

No cat has two tails, every cat has one tail more than no cat, every cat has three tails.

To remove ambiguity demand definitions—even a nominal definition will answer.

Sweeping generalizations are fallacious and so are the uses often made of probabilities, which are taken as certain, and losses are occasioned in gambling by a wrong use of the matter of probable chances.

Popular fallacies may pervade vast numbers of people from which it is treason to dissent. Error may pervade an age which the next age may remove, false principles cling to the masses which the philosopher observes but cannot change. Irrelevant conclusions are often of this nature.

I. Among common popular fallacies is that which forbids anything but good to be said of the dead. One means of fostering this is the superstition that the dead, no matter how unworthy, may do the living a favor. *De mortis nil nisi bonum*.

"The same man," says Jeremy Bentham, "who by praising you when dead would have plagued you without mercy when living." A dead man cannot be a rival. Rivalry is stronger among acquaintances.

II. *De gustibus non est disputandum* is used to stop controversy by indicating that different views need not be reconciled. Each has his own taste. Standards may be secured to which both may agree.

III. Patriotic prejudice. That of assuming one's own particular government as the best. The Russian, Englishman and American knows he has the best government. Utopian schemes of government show how absurd "nature menders" become.

Governments are often suited to the people who endure them, a despot is needed for barbarians and a republic may exist among the higher civilized classes.

IV. Sweeping classifications:

"The crimes of kings," meaning Louis XVI., while he was the best of them.

"The cruelties of the Catholics."

"Protestant intolerance," during James II.'s time.

V. No precedent argument, and as there was no complaint it must be good.

VI. Diversion to personalities, laudation, abuse, etc.

VII. Party compulsion, to follow a leader merely because he is of your political party. Right or wrong fallacy.

Those who dare think for themselves and protest are turn-coats, traitors, fickle, unreliable.

Self interest and not truth is the aim and slavery results.

Copée says: "Birds fly; this is true of birds universally, and we have the right to prefix the sign all, which denotes it an universal proposition."

Showing that a logician may be a poor naturalist and that the logical mind does not impart ability to recognize facts unknown previously. The apteryx, the dodo, penguin, emu and ostrich are birds that do not fly.

Greeneaf, on "Evidence," remarks that webbed feet are evidence that a bird is aquatic, unaware that the webbed foot Pekin duck drowns if it gets in water and dislikes to have its feet wet.

One, it is said, preferred to be right than consistent. "Consistency is Truth," says Edgar A. Poe, but we have to use care about consistency, for it changes as truth does sometimes. He regards the deductive as *à priori* and the inductive as *à posteriori* methods of reasoning and in suggesting that the syllogism is not the only means of ascertaining truth and recommending the test of consistency as the only one, Poe says the syllogism crawls while the consistency test flies. "Because the tortoise is sure of foot for this reason must we clip the wings of the eagle."

Axioms do not exist, he contends, because there is no ultimate knowledge.

The commonest blunder is accepting some as all, the next most frequent is false association, and the worst of all is blindly accepting "authority."

CHAPTER XVI.

MENTAL DISEASES.

Condensing from the chapters on causes and pathology in my Medical Jurisprudence of Insanity, the main factor in insanity is in a constitutional taint, the mental machinery may be said to be rickety, so that comparatively little things put it out of gear, such as troubles, worry, excitement, some bodily diseases and even child birth or the development crises of puberty and age. Alcohol and heredity are the main causes usually in connection with other matters. Diseases may be severe enough of themselves to induce insanity. Perverted circulation as when the blood current is too slow or too fast may set up depressed or exalted states, the cramping of blood vessels in different parts occasion hysterical symptoms and in epilepsy the circulation is badly disturbed. Interference by compression which cuts off the blood supply to brain parts produces various mental and bodily defects. Auto-toxæmias the retention in the system of effete materials accounts for neuralgias, melancholias, delirium, hysteria and the furies of insanity generally. Brain deformities, as in idiocy, or after an injury to the head, or a disease, such as scarlatina, often profoundly modify the brain workings. Nutritional faults are the general results of all these causes.

Alcohol poisons the blood and nervous systems, which regulate mental and physical adjustment of means to ends. Man is not the only alcohol-drinking animal. Chickens and ducks can become addicted to liquor and neglect food for its sake. Buffon tells of a wine-drinking chimpanzee and Brehm of mandrills that regularly drank wine. Decayed fruit may cause cattle to become drunk, oxen and cows have been seen drunk in orchards; they stagger, and grow sleepy. Animals are susceptible to drunkenness in proportion to their intelligence. Elephants are fond of liquor of all kinds and rats gnaw the staves of casks to get at the

contents. Cats do not seem so much inclined to drink alcoholics. The parrot is a prime toper. Swarms of bees have become helplessly drunk on the poisonous linden nectar, and fishes have become suicidally drunk from alcohol in their water.

The entire animal kingdom has suspiciousness and apprehension as a fixed instinct, stronger in some species than in others, stronger in some races than in others according to localities and what the people had to combat or to fear. Dread, care, apprehension are human heritages, modified by circumstances, always ready to develop if occasion demands, or if the mind fails to correct unpleasant sensations sufficiently. Habit can intensify apprehension. Incessant worry about the future makes dwelling upon possible misfortune a normal average state. Age may intensify these fears and the dissolution of the normal relations of the intellect caused by insanity may further increase dread into delusions of persecution owing to the mental integrity being absent that formerly corrected these feelings.

Some persons seem to be naturally suspicious, as Beethoven, who, though continuing to compose music, grew more suspicious as his deafness increased. In such cases the difficulty of understanding what was going on about him contributed to the apprehension, while a normal mind becomes reconciled to deafness.

Suggestion to the mind seems to be the starting point of many delusions. The cold legs due to a bad circulation may suggest to the hypochondriac that his legs are made of glass. The cataleptic muscular tension of katatonia suggests to the mind the stagy behavior, just as a good circulation suggests vigor, hopefulness and cheeriness. Visceral states may involuntarily awaken emotions and even motor reflexes. If the heart starts to beat very rapidly by some mechanical nervous and vascular cause, which at the same time disables the mind from recognizing the mere fact as being caused in some unknown way, then the enfeebled intellect assumes the readiest explanation at hand, that of being persecuted, or bewitched, or electrified, etc.

In some logically insane there are spots of gray matter out of place in the brain, with inevitable erratic reflexes or behavior different from that of ordinary persons. There is a tendency in some of these to seek the meaning of signs, omens, sym-

bols; they are mystics, and attach importance to many silly simple affairs. One at the county insane asylum studied the engravings on dry goods labels and assigned mysterious importance to scroll work. This mysticism appears like a reversion to primitive savage states of mind when the heavens and earth were full of mystery and things to fear and to propitiate. This inclination to mysticism or to interpret symbols foolishly belongs to a certain stage of brain development, that of the age of the race corresponding to childishness. Most superstition originated in the childish periods of races. Inclination to mystery is in every child and sometimes is not outgrown, attracting those who take advantage of such simple-minded persons.

The cause of marital infidelity delusions of the alcoholic is that his lowered mentality at the time disables him from judging by his later acquired intelligence; he goes back thousands of years in ideas and thinks as the pirate and savage of old did. This is the best possible interpretation of the extremely common assertion of alcoholic insane persons that their wives were unfaithful to them. In some cases of recovery, which does not occur often, these patients have denied any recollection of such accusations.

Delusions that parts of the body are gone could arise from loss of sensation in such parts.

Delusions of being two persons could occur when the person had an hallucination of seeing himself walking about, while he at the same time realized that he was also in bed. The touch sense was sane, but the optic affected.

Suspicion being a characteristic of all wild animals, it also appears in many diseases of the mind, such as melancholia, phthisical insanity, paranoia, hysterical insanity, whose special intelligence integrity does not control the generalized basic emotions. The delusion of persecution is the natural consequence of millions of years of hostile surroundings, in savage and animal inheritances. The depressed feeling, apprehensions, etc., so natural in sickness and even in ordinary health to most persons due to this "organic memory" of past remote ages, when enemies were to be evaded or fought. Delusions of grandeur in destructive brain diseases come from blunted ability to feel pain, fatigue or care, a sort of mental anæsthesia and the rapid oxygenation of mania

like a stage of alcoholic intoxication also imparts a similar feeling of well-being. The poisoned circulation fully accounts for the misery of melancholia and the enfeebled intellect misinterprets the causes of the discomfort.

The feeling of unworthiness that is merely exaggerated in melancholia is normal in many otherwise sane persons and has in all likelihood come down to them naturally from oppressed ancestry. Many extra meek people act as though nothing was their due; timidity seems born in them, a race of beggars or slaves could transmit such feelings. One feels in the way, must not oversleep, must not bathe for fear some one else might need the bathing room, must not eat too much, for others might want it. A slave idea may have thus come down through abuse of one's ancestry.

Illusions are misconstrued perceptions comparable to the substitution of one word for another, metaphasia, paraphasia, the wrong reflex being excited, so the wrong imagery or sound may be recalled in illusions, or the wrong causes may be assigned to the impression. In hallucinations the brain memory centres are excited by some internal cause, in illusions the cause is merely misinterpreted.

Optical illusions are numerous, confusing past with present appearances, immediate sensory data with residua of past experiences, subjective with objective, and the remembered with the actual, dreams with waking experiences.

Life is full of illusions of all the senses, beyond such things as rainbows, moon-dogs and sun-dogs, one of which founded the story of the Constantine apparition. The perspective is an illusion, and comets are mere sun reflections upon aggregations of meteorites, and astronomers are slow to accept the simplest explanation of such things, just as Galileo's, Copernicus' and Kepler's ideas were rejected by the star observers of their day.

Hallucinations and illusions as in dreams are invoked memories without the ability to discriminate between the real and false. Nightmare and dreams generally are more or less hallucinations or illusions; that is, baseless or misinterpreted perceptions.

Hallucinations are but memories aroused subjectively in the absence of external causes, the illusions being also memories

aroused for which there is an external, objective, but mistaken, cause, or the memory mistakes the impression.

The hallucinations of delirium are associated with the blood perversions of fever causing unwonted imagery and brain impressions generally.

Many visceral derangements, temporary or permanent, organic or functional, suggest emotional states to the mind, peculiarly so in hypochondria and melancholia, and rapid pulse and brain oxygenation characterizes mania. The volubility and excitement is directly due to interference with the normal visceral functions, and the brain is the last organ to be affected.

Hallucinations may be called memories which by their vividness may be mistaken for sensation. Some irritation of the centre for the memory is involved. In illusions the wrong memory is roused, a sort of twisted apperception; the present arouses the wrong past in recollection. So in a disordered brain a memory may become so vivid as to be mistaken for a reality.

CHAPTER XVII.

CHARACTER.

Those who try to know the hearts and read the faces of their fellow-men, whether from sordid or better motives, often find good and evil so mingled as to upset any extreme theory of human actions. No matter how often the merchant is cheated he may feel that all men are not liars and thieves. Nor could he conclude from the many honest people he meets that all men are upright by nature. Finding also that many whom he thought to be knaves or honest turned out to be otherwise, he will, if he is large-minded, infer that there are no off-hand tests, or, if he is small in mind, which is too often the case, he is more apt to suspect all to be deeply selfish and fail to observe the frequent proof of the very reverse, or he may account for uprightness as due to a weak mind. And seldom does he include himself as subject to the rules he may apply to others.

Then, though mercy prompted the legal maxim, in use in English speaking countries, that "all men are to be considered innocent until proven to be guilty," business interests could not safely regard all men as honest till proven dishonest, and no matter what pretense is made the busy world is forced to hold to the reverse.

From such facts it may seem that a science of character could not be built up, but new methods of thinking out such problems belong to this century, and by patient and proper study of the brain and mind, and their origin, we will have a vastly more correct knowledge of such matters.

"All men are bad" is the often made assertion of the woman who has had unfortunate experiences, but the one happy in the possession of a faithful mate smiles at the statement and is apt to make sweeping inclusions of an opposite nature.

A cynic looks only upon the evil everywhere, another sees only

good abounding, and it is this latter person who is rudely shocked by treachery of trusted friends, and who as he grows old may finally develop a suspicion of everyone, particularly of those least deserving it.

Turning from the pettiness of the many whom we daily meet to the records of such patriots as Washington, Sobieski, Garibaldi, and such self-sacrificing enthusiasts as Xavier, De Smet, John Brown, and hundreds of others who could be named, as placing themselves at naught and principles as foremost, we see something we call noble in human nature and marvel at its appearance in a world apparently based upon wholly selfish motives.

Alexander Pope mentioned the "man to books confined, who from his study rails at human kind," and between this and the too pleasant views of the optimist, we can steer a middle course and find much to admire, as well as much to regret, in the composition of our fellow men, and without the supercilious complacency of the "better-than-thou" Pharisee, we can not only forgive others, but learn that we have nothing to forgive in people who act out their natures.

The mystery is not so great that there are brutal human beings, but whence came the excellent, the good, the sincere, the humane, who appear sometimes amidst feudal, piratical and other base people? We know of mercenary armies laying countries waste, we hear of rapine, murder, slavery, cruelty, and of nations of liars, but have we such characters as Freytag pictured in his "Soll und Haben" of the merchant who kept an account with God and passed all profits to the credit of the deity, and acted as though all unfairness with his fellow-men would be punished.

Each can recall fairly ideal persons, unselfish, kindly, honest, and we wonder at defects in their make-up, as though perfection in all things were possible. Our youthful conceptions are badly deranged by discovering that there are such things as "praying rogues and swearing saints."

In making just estimates of character individual biographies are seldom of use, for but little of the real life of the person is recorded therein, while they contain much that is pure error, nor do histories of nations afford us much beyond royal rascalities and courtly intrigues, narrations of wolves and foxes in high

places. The common people have not, till recently, been studied very much.

It is beginning to be realized that the best people in the world are very often those of whom the world never heard, but current reputations as we find them in print may, in a general way, be just, and it is not necessary to imagine that all things are not what they seem to be, only it is best to know the reasons why things are as they are, and that we are not deceived in our estimates, and to realize that changes are liable to occur under altered circumstances.

Writers such as Charles Reade, Charles Dickens, Tolstoy and Ibsen bind up much acute observation of human nature with their narratives, and their popularity justifies the "novel with a purpose." Occasionally, even with the best of intentions, a Wilkie Collins will go astray in portrayals of character, and so, in the main, fiction, though founded on some fact, has to be carefully and charingly accepted as biography and history.

Those who made personal sacrifices for opinion's sake and what they considered to be the welfare of large numbers of their fellow beings, usually to rescue them from suffering, whether the suffering was in this world or expected to be encountered in another world, deserve special regard, no matter how mistaken they were, or what harm they may have done unintentionally.

Hall Caine did not overdraw the bigot John Storm who was willing to murder the one he loved to save her soul. Storm followed out his belief logically and with the usual apparently inconsistent result. The time-serving, pompous bishop and the truckling hospital officials are also well described. Unforgiving, hard, cruel, grasping. All in the name of Christ.

The olden so-called sciences or philosophies like alchemy, magic, and so on, were based upon the desire to take advantage of the people in various ways, to control and rob them of money or time or life. As science becomes more exact a desire for learning for its own sake is substituted, and the object of study ceases to be base. Finally the missionary spirit finds in science scope for its fullest exercise, and realizes that great good to multitudes will follow from patient research, and its application

to an amelioration of human conditions. Nowhere will this be more evident than in the future insane asylum.

Criminologists investigate the lower social strata for stigmata of degeneracy, neglecting the respectable who places himself above the law.

Governor Hazen S. Pingree of Michigan, in a speech to the Nineteenth Century Club in New York, said:

"I have found it necessary, and continually practiced it, to pull the screens wide open in front of every man who was doing dirty work, to call him by name, and show up his schemes in the newspapers. It is your so-called respectable people who are the most dangerous. Their cloak of eminent respectability hides them, and people hardly believe you when you show them up, especially when they are church members or carry long faces. My experience is that those who stand foremost in the synagogue and utter long prayers of a Sunday and engage the rest of the week in bribing aldermen or getting up stock jobbing schemes to defraud widows and orphans are the most dangerous members of society. Good municipal government is impossible while valuable franchises are to be had and can be obtained by corrupt use of money in bribing the people's servants. The people must be kept awake or the thief slips in."

Between the two social extremes, the very wealthy and the very poor, exists a multitude of workers, many of whom are so routinized, so differentiated, habituated to honest methods that a proposal to better their fortunes by what they have grown to regard as dishonest means shocks them and is resented. Though many who practice such means would be surprised that they should be regarded as dishonest. There are straightforward toilers in abundance in this world who could not be induced to depart from honest ways. They are organized by habit, heredity and surroundings and would be most unhappy if tempted to surrender their customs. Yet these are the same Simians from whom came the cruel and rapacious, showing that human nature is capable of wonderful modifications but requires long periods of time. Nature menders expect to make the metamorphoses in a few years through some optimistic system built upon inducing every

man to be honest. The guillotine would have to be set to work if rapid elimination of dishonesty is to be secured, otherwise there must be patient waiting for the effect of influences operating through thousands of years before radical changes can be effected, and then unforeseen consequences must attend such modifications.

It is a common supposition that intelligence increases morality. Buckle shows that this is far from the truth. Intelligence changes the character of knaveries, eliminating the vulgar kind and substituting the refined. . An unintelligent man is apt to betray his meanness but the educated one has learned to conceal his baseness, or even to go to the extreme of pretending to be better than he is. Ignorance and lowness may co-exist but the one is not necessary to the other, for we find well-meaning ignorant and intelligent rascals. Education often improves the means for low natures. A very high intelligence, however, is apt to take no pleasure in baseness, as a perverse nature is blind to truths intelligence is capable of appreciating. The higher mind sees a higher expediency.

Fear of punishment or vengeance, superstition, sympathy, the feeling of shame and of honor and justice make many a character better. As ostracism is the penalty of dishonor at times the feeling that one is an honorable man is a strong deterrent from doing wrong.

As Schopenhauer claims, good acts have as incentives self interest, kept in the background, hope of reward, the desire to help, for we may need help ourselves. He did not believe in a sense of duty, but it exists, nevertheless, and is composed of all the incentives creating motives to other good deeds.

Goethe said a man may use his reason to enable him to be more bestial than the beast. Bacon had a fine mind but was a scoundrel. A person may have weak reasoning and yet have a high sense of morality.

Circumstances and education, particularly early training, may give the direction to character, but the zest, sincerity, aggressiveness, will power, energy or fierceness as well as their absence, with selfishness or unselfishness, come from heredity in most cases. While stalwartism may beget it, there are instances of fail-

ure to do so. The altruistic Abraham Lincoln left no progeny resembling him, and great leaders like Cromwell fail to transmit their characteristics. His son was frightened at contemplating the king business and declined the job. As a rule the degenerate sons of worthy leaders are eager to grasp the power of their dead father, and when the people develop intelligence enough they will outgrow hereditary sovereignties.

Laziness and industry are matters of body and brain, ambition and integrity. A listless wealthy person is an invalid, if poor he is a tramp, as inebriety and drunkenness are matters of cash.

Nutrition must be neither in excess nor defective, for when life is too easy, parasitism or sluggishness may occur. If too hard then faculties may be starved. Huxley remarked that more genius had been smothered by wealth than extinguished by poverty. Tropical climates tend to enervate those from colder regions. The need for exertion develops the highest races in the wintry countries. Blaming the Corsican for his passion is blaming the sun. Seneca claimed that difficulties strengthened the mind as labor does the body, so this truism had early recognition. Longfellow worded it: "In this world one must be either anvil or hammer" and a board of trade man summed up the fight of life in: "One must run with the hares or chase with the hounds."

Interference with the ability to repay may put a debtor in a false light, but there are persons with constitutional inability to calculate properly, often unduly hopeful, causing spendthrift recklessness and debt accumulation. Thackeray speaks of an English type of gentleman who lives without work by sponging, usually, however, upon lordlings who in turn sponged from the masses. "And these fleas have still smaller fleas upon their backs to bite them." Parasites upon parasites. Intellect merely ministers to the wants and demands of the propensities, and without these propensities the intellectual powers would not be exerted at all, says Clouston. Then biologically the brain is superimposed upon the nervous system and that upon the muscular, all of which are to facilitate ingestion and excretion, so the highest intellect is merely an appendage to the intestine and most lives prove the propriety of this view. Were it not for development radically changing characters in an endlessly modifiable way as

Spencer notes we would be puzzled to account for extreme altruists like Probasco who gave away his all, if life is based upon such greediness altogether.

Roger Williams, who died in 1683, gave all to his colony. His son wrote that had he been a covetous man most of the town would have been his tenants. We call those great, says Knowles, his biographer, who have devoted their lives to some noble cause and influenced for the better the course of events. Measured by that standard Roger Williams deserves a high niche in the temple of fame among reformers. He believed in religious liberty and democratic government and despised puritanical starchiness, pretense and humbug. He was the prophet of complete religious toleration in America. He was "conscientiously contentious," always pleading for some magnanimous idea, some charity, against some wrong, for forbearance toward body and soul. He could do nothing by halves and, of course, was called "presumptuous, turbulent and seditious." Like Voltaire he was always interfering with some one's vested interest in the profits of wrongdoing and cursed by ignorance and greed for helping the victims of church and state.

Often some prominent trait will obscure all other characteristics and we fail to observe how our idols are made of clay, according to our conventional notions we prefer to think one is either wholly right or wholly wrong. Avicenna of Bokhara, among innumerable others, the celebrated scholar and philosopher, was as devoted to wine and women as to learning. Daniel Webster had a similar character. And, by the way, character is often one thing and reputation another, the latter being in most cases a misfit. Popular opinion, to which there is such deference, is that of the class to which the person belongs. Professional or business men are guided by the views of their own vocations.

Cope classes practical types of mind, under the groups mercantile, literary and scientific. The first accumulates and often deprives others, the second deals with the manner of things. Symbols are its instruments and these may be mistaken for things. The third counts wealth in ideas. It gives away its commodities for the benefit of others often without credit. A

further inclusion of these may be into intestinal, sensual and reasoning. The viscera do not deprive other body parts because they cannot eat everything themselves. Literary people are pleased with jingle of poetry, resounding phrases, bright colors, music, pictures.

The desire for wealth is based directly upon the hunger desire and the money making ability is seen in many imbeciles who save and stint themselves for the mere purpose of accumulating. Those who sink every sentiment in pursuit of money are practically hypertrophied intestines or, as usually known, are sharks. Achievement, work and the desire to exercise power may be coupled with the basic instinct and how unhappy are the retired accumulators. Thoughtful people resist the tendency to be arrogant when rich and servile when poor. Holmes advises keeping in mind that you are only an atom of humanity and have neither vice nor virtue enough to cause you to be singled out for supernatural favors or affliction. Voltaire remarks: "We have only two days to live, it is not worth while to spend them in cringing to contemptible rascals." Character is often predetermined by inheritance that may run back a generation or two or revert to the remotest of savage ancestry by some failure of development of the brain.

A characteristic of youth is the readiness with which things are learned at that time. Age increases the difficulty of learning, but the experience gained, which, after all, is something learned, ripens the judgment. Youth is rash, age is cautious, the youth is a spendthrift while the ancient is often a miser. A man will be calculating, emotional, sincere, treacherous, frank, etc., as a summing up of inheritance and environment from thousands of years before he was born. Holmes says:

"Each of us is only the footing up of a double column of figures that goes back to the first pair. Every unit tells and some of them are plus, and some minus. If the columns don't add up right, it is commonly because we can't make out the figures. I don't mean to say that something may not be added by nature to make up for losses and keep the race to its average, but we are mainly nothing but the answer to a long sum in addition and subtraction. No doubt there are people born

with impulses at every possible angle to the parallels of nature, as you call them. If they happen to cut these at right angles of course they are beyond the reach of common influences. Slight obliquities are what we have most to do with in education. Penitentiaries and insane asylums take care of the right angle cases."

Sancho Panza remarked: "Man is as God made him and sometimes a great deal worse."

"While all men may be created equal they don't seem to stay so."

Characters are divisible into ordinary and extraordinary, any one of which may lack symmetry and is the product of heredity and circumstance subject to the modifications of age, hardships, affluence, disease, or drug habits, particularly that of alcohol.

The waif develops the foxy nature naturally and may prey upon the community that neglected him in youth.

In contemplating an appeal to the public to investigate and reform a bad political insane asylum, it occurred to me that the public, who were asked to do so, included people who neglect their servants, merchants who boodle by selling goods to public institutions and paying politicians a portion of the overcharge, also ministers who thunder against sin in the abstract and fear to go into particulars in their sermons, for boodlers are in their congregation.

No aid can be had from hotel keepers who huddle a hundred girls into space for twenty, in hot rooms, with no transoms or windows, or from merchants who have to be compelled to give their saleswomen seats or decent accommodations of the most ordinary kind, or who give out piece-work shirts at starvation rates per dozen, and throw a lot of it on their hands and invent excuses to rob them, nor from those who work children under age and rob them of their wages.

If character can be chronologized as pertaining to certain periods of the world, then such a man as the Spanish priest de las Casas was ages ahead of his time, as he was immeasurably above his people in sympathy and rectitude. In the sixteenth century he denounced slavery of the Indians, and like De Smet, opposed their being robbed and murdered. But we more fre-

quently find the spirit of the middle ages earnestly advising a young doctor to "fake it." His friends tell him: "You will be poor if honest, people like to be humbugged." Rarely does he hear the advice: "Preserve your self-respect at all costs." An energetic politician, gambler and whisky seller is adored by his family and immediate friends as a kind and indulgent father and generous, considerate friend, and yet the very means he is thus able to disburse are stolen from public monies appropriated for the poor-house and insane asylum. In this instance the faithfulness and sympathy extends to those most near, and not to others, particularly strange families or the rest of the community. It is a stage of development in which multitudes still remain, a survival from worse than barbarous days. The tribal sympathy has not appeared that will enable the man to fancy suffering in the abstract or care for it in strangers. He can despoil others to enable him to be "generous," and a good family provider.

It is reported that some fashionable clubs have developed a mania for tattooing. This is a natural stage of savagery and among criminals and degenerates, just as insanity may be the approach to idiocy of too much luxury and release from brain exercise in some of these same club members. In the lower organisms parasitism takes away useless organs such as brains, arms, legs, eyes and so on, when the parasite gets his sustenance without exertion. The rule applies to man, as well, to a great extent. An old Spanish proverb has it: "Give your son a fortune and throw him in the sea."

The child copies the world's mental development in earlier communities, as in lying, stealing, organizing pirate and bandit expeditions, loving excitement and play, in being mischievous, cruel and greedy. Some adults remain undeveloped beyond certain of these stages, as the mischief-maker, the cruel horse-play practical joker, the liar, the thief, and the unscrupulous boddler who, by robbery, directly and indirectly, causes the death of many sick and poor, to enable him to be good to his own family and friends.

I know an instance of habitual treachery in a young man, who was pardoned time and again by his employer, but who

could not resist a chance to repeat his ungrateful, underhanded attempts to injure his employer to secure an advantage for himself. Women are specifically sympathetic but not so in the abstract as a rule. Their imaginations do not permit them to realize strangers suffering. Sympathy is first aroused by experience, next in imagining others' suffering as we did, and finally this feeling extends beyond those nearest to us. Eddyism destroys sympathy in denying that there is such a thing as pain, hence the reversion of the members of that cult to idiots. Beauties are more apt to be fickle because they realize that their charms are merchantable and they do not have to accept the first bid.

When the wealthy invite celebrities to their parties, it is usually to exhibit their ability to buy the curiosity, to excite the envy of rivals. Dr. Sam Johnson, in his immortal letter to Lord Chesterfield, asks if a patron is not one who looks with unconcern on a man struggling for life in the water, and when he has reached ground incumbers him with help? Schopenhauer points to rogues being mutually attracted and base natures find so much in common with others that they are never at a loss for company. La Rochefoucauld said it was difficult to feel deep veneration and great affection for one and the same person. That familiarity breeds contempt is an old but proven rule. The only way to attain superiority is to be independent of everyone. No one is a hero to his valet and families underrate their own members.

In the Introduction to Robert Chambers' "Vestiges of the Natural History of Creation," Henry Morley says that to understand a man fully we must know all that he did and why each thing was done, how the surroundings of his life affected tone and thought or action, what in each instance determined action and what was his age, at every stage of life, for the wisdom of a man of thirty-five may be the folly of a man of seventy.

You cannot know a man unless shipwrecked with him or till you have seen him become rich. One who in poverty was agreeable in prosperity was otherwise. Every man may have his price, but sentiment may be the price of some, not sentimentality, which is a different thing. Many sincere persons look to another

world for their price and many natures are so habituated to hug their principles that nothing on earth could ever take them away but death.

Conceit may cause a man to live up to what the world expects of him and he may do right always for that reason. Vicissitudes have developed character as it has nations.

The character and teachings of Christ, freed from the interpretations of the designing, just as the simple people understand them, appeal to the heart if there is any good therein. Even if these teachings have antedated Christianity they exhibit a spirit of dissatisfaction with evil and a desire for justice, peace and kindness for a community. But, as Tolstoy observes, these things have undergone astonishing perversions in the interests of a cruelly selfish priesthood and government.

No character is wholly balanced, no one has the completeness imagined to be in heroes. A vain man may be justified in his vanity by ability. A disagreeable martinet may be far from empty headed. A gifted scientist has been an abominable liar which is all the more surprising when science begets truthfulness. Spencer observes that credulity accompanies unreliability, and doubt is an associate of truthfulness.

Every trait must be regarded by itself, for a single trait, good or bad, may be developed in a person. It is rare for a whole group of characteristics tending in one way, as wholly good or wholly bad, to appear, so "no man or measure is wholly right or wholly wrong."

Courage is not a virtue when it may be as readily the servant of villainy as of justice. Envy hides its hatred so as to be the more dangerous. When it finds a pretext it explodes with virtuous indignation. Detraction has followed superiority until recognition of ability became general. Dr. Nicholas Senn, the American surgeon, met with the opposition of his mediocre confreres until his researches obtained world-wide fame. Jealousy prompts venomous attacks upon rivals particularly as they show excellence. Superiority is the unpardonable sin, in your particular profession or business. Nor will humility save you. A Russian proverb is: "Make yourself a lamb and the wolf is ready."

The wrecking disposition may be so strong that one may be willing to destroy cities for loot, sink ships for salvage, derail trains and kill passengers for plunder, conspire to have friends lose fortunes for the sake of a few hundreds of dollars gain. This wrecking disposition in all its manifestations, from political boodling down to sacking countries, dates further back to the grab instinct associated with merciless lack of sympathy, and is consequently shown by low-grade intellects, however otherwise "intelligent." Jesuitical inclinations may go to the extent of sacrificing friends to gain what may be considered some worthy end.

Some characters are unstable, others fixed. Some never finish work enthusiastically begun, others plan and persist in carrying out the work of years. Some are reliable under ordinary circumstances and quick to take advantage of opportunities, as during the great Chicago fire or any vast popular upheaval the bandit spirit appears where before it was unsafe to show itself. There are the rash, the impulsive and the deliberate and cautious. Attempts have been made to classify by temperaments but such things are too artificial in the main.

Holmes holds that every human being has in him stuff for one novel in three volumes, duodecimo. But the novelists create impossible characters. In their novels children talk like sages, the hero is powerful, rich and handsome; he swims seas, lifts bulls by the tail and performs other prodigies, his hair breadth escapes are always successful, but he never can speak the simple word that prevents misunderstanding and suffering. He allows the murderer of his father and wife to have the best hold in rough and tumble fight, as in *Lorna Doon*. He marries the most beautiful girl and always saves some one from drowning.

The value of popular estimates of character appears in epicurean being equivalent to gourmand when Epicurus inveighed against gluttony. Machiavelli described the soullessness of nature and is credited with applauding it. Boycott was the victim and not the originator of boycotting. Tom Paine was a lover of liberty and Voltaire was another, both of whom were held up to execration as irreligious and both believed in God and had infinitely higher conceptions of the deity than the designing who turned the ignorant against them. Draco, B. C.

700, is accused of awarding death for all crimes when he merely wrote up the existing Athenian laws in an endeavor to purify them. General Macias was accepted by the Spaniards as having great mental endowments when it was the physical superiority that occasioned Isabella the second to raise him rapidly from the rank of common soldier "for extraordinary capacity."

Probasco gave \$700,000 to the city of Cincinnati, which permitted him to suffer want in his old age.

Goethe, in *Wilhelm Meister*, remarks that the man who is born with a talent which he is meant to use, finds his greatest happiness in using it, and Aristotle claimed that to be happy means to be self-sufficient. Schopenhauer expresses the same thing in saying that a high degree of intellect tends to make a man unsocial and that the ordinary man places his life's happiness in things external to him, so that when he loses them or finds them disappointing, the foundation of his happiness is destroyed. Goldsmith adds his opinion in the lines:

"Still to ourselves in every place consigned
Our own felicity we make or find."

Stobæus, in his exposition of the Peripatetic philosophy, says that happiness means vigorous and successful activity in all your undertakings.

Undoubtedly conditions of stomach, heart, liver and other organs determine the dismal or sanguine nature as well as dark or bright days and the state of the weather, but Boswell digressed long enough from his worship of Johnson to quote a Turkish lady who had been educated in France, as exclaiming: "*Ma foi Monsieur, notre bonheur depend de la façon que notre sang circule.*"

The influence of contact with the world in developing character is apparent in instances where imprisonment prevented the mental exercise as in the cases of Casper Hauser, the son of the grand duke of Baden, and a Missouri case named Deitrich, both of these, when liberated, were practically animals without speech.

Diseases, such as scarlet fever, small pox, diphtheria, typhoid fever, especially when occurring before development has taken place, often arrests or alters the brain structure and profoundly

modifies character. I have known children to be abused at their homes and in school for backwardness and stupidity when the discovery that the eyesight was bad and the use of spectacles resulted in disclosing a keenness of intellect little suspected. Partial deafness from middle-ear disease obstructs intellectual growth and as the world is usually uncharitable, the sufferer is taken for a dunce. Increased knowledge of causes of erratic behavior begets charitableness. The irritability of epilepsy should always cause allowances to be made. We do what our make-up impels us to do, a certain shaped brain, with the co-operation of other organs, entails a certain character. An injury to the head or the rupture or plugging of an artery in the brain may suddenly change a character radically and for the worse, as when a steady, respected, aged man all at once behaves like a fool or criminal. Though streaks of meanness may exist naturally as where a millionaire father robs his own son who is trying to struggle up out of grinding poverty. I knew a man who stole a patent from his own boy and appropriated his earnings besides. Usually the father makes sacrifices to help his children. The primitive intestine must be too strong where there is so much selfishness.

Characters differ in animals of the same species, some horses, dogs or monkeys being intelligent and others stupid, some sympathetic, others cruel. The fox is naturally adroit, the shark voracious. Sentiment cannot be denied to dogs when an old one may snap and snarl unnoticed at a powerful young wolf dog who could kill a bull dog in a minute's encounter. The strong young dog seems to realize the irresponsibility of the aged toothless one and pity his helplessness. The South American puma is astonishingly gentle to the human race, though fierce with other animals, probably due to the pumas having been domesticated by the ancient Peruvians. Some monkeys are sedate and others playful, the sacred monkey of India is melancholy, the mandril is ferocious. Sir John Anderson says that a dark and a pale race of oranges may be distinguished; a sort of Aryan and African color distinction. One gorilla may be gentle, though most others are malicious.

The oriental mind is incomprehensible to the European. A

Turk will not hurt a dog from a superstitious fear to do so. Hindoos fear to brush flies away imagining them incarnations of their friends.

The Italians have a saying that St. James put the heart of a fox and the fang of a wolf in a bladder and blew it up and called it a Spaniard. The peculiarities of other natives are ascribable to climate and long ages of circumstances. Those whose marriage customs admitted of the pernicious consanguine and very early mating would surely degenerate. Too much fighting and hardship prevented the Irish from attaining the highest development. They are still practically in the patriarchal stage and with difficulty can be tribally loyal. They do best abroad.

Some business men fancy they can read faces and that they have intuitive abilities to tell character. The fact is, every one is an unconscious physiognomist and all of us form prejudices against or likings for persons because they resemble those whom we had occasion to dislike or like in the past. So intuition is merely a memory exercise, and a very unreliable one, too. Some carry this to the extreme of hating one who has a certain family name, or because he combs his hair as some scoundrel did, and so on. But prejudices are ingrained. We approve of methodism, catholicism, homœopathy, allopathy, eddyism, mormonism, the republican or democratic party because we were raised to like or hate such matters and grow angry if any one tries to unsettle our regard. But thinking makes the head ache and we have to devote all our time to getting a living, or spending what we have made.

The Zurich parson Lavater formulated a foolish lot of rules of physiognomy. In a general way we are impressed by faces as expressing certain characters, and as we grow older unlearn much that we thought we had known. The kind face we revered may with experience disgust us for its hypocrisy, the ugly man we feared may later be loved for his good qualities. A large jaw is a survival from savages with great force of character and in turn they inherited this jaw from animals with large muscular and bony development. Determination, not necessarily brutality, is indicated by the mastiff mouth for these reasons.

As for off-hand character reading the policeman sees guilt in

every movement. The prisoner pales or flushes, he is calm and therefore hardened. He talks too much or is silent. All these are evidences of guilt to the undisciplined intellect. Detectives have a maxim that the honest man behaves like a guilty one and vice versa. None of these opinions are worth a rush.

Precocity is not always desirable in a child as it may indicate tuberculosis or some latent defect which will act detrimentally later. Most prodigies lose their abilities and if one part of the brain is unduly nourished it may be at the expense of another part. Blindness may be associated with a prodigious auditory memory, in my opinion due to the extra vascularity of the hearing centre where the visual centre is deprived of blood.

Even genius may have small traits as when Virchow truckled to ecclesiastical prejudices against the evolutionary theory and Cuvier snubbed Lamarck. Prof. E. D. Cope¹ has an excellent editorial on this unfairness, instancing an able archaeologist like Brinton as inconsistent and leaning to popular prejudice with lack of biological information and yet he could be instructive where his prejudices are not concerned.

Correlation is the genius method with intense application, Helvetius regarded it as continued attention, but there is an anterior structural cause in brain and body development. Under genius has been grouped many diverse peculiarities and the word has never been satisfactorily defined. It expresses great ability in the main, and some regard it as different from talent. The matter is more fully discussed in my recent work on insanity.²

Voltaire wrote that :

"Nothing but a name remains of those who commanded battalions and fleets; nothing results to the human race from a hundred battles gained, but the great men of whom I have spoken (Sully, Molière, Lebrun, Bossuet, Poussin, Descartes, and others) prepared pure and durable delights for generations unborn. A canal that connects two seas, a picture by Poussin, a beautiful tragedy, a discovered truth, are things a thousand times more precious than all the annals of the court, than all the narratives of war. You know that with me, great men rank

¹ American Naturalist, Oct., 1894, p. 902.

² Medical Jurisprudence of Insanity, p. 843.

first. I call great men all those who have excelled in the useful or the agreeable. The ravagers of provinces are mere heroes.

"Every desolator of the earth began his work of massacre and ruin by solemn acts of religion and, while the ground still smoked with carnage, hastened to the temple to repeat those solemn acts."

Prominent men, would be leaders of men in various ways, creditable or discreditable, have suffered defeat of their ambitions, but the philosopher who works calmly along, caring nothing for what the world calls success, doing what he can for the wilderness of apes with no expectation of appreciation, is the happiest. Too much success may be inconvenient, as in the instance of Du Maurier who was killed by popularity. Voltaire was overwhelmed by visits and exclaimed "Deliver me from my friends." Spencer says that those who elaborate new truths and teach them to their fellows are nowadays the real rulers, "the unacknowledged legislators," the virtual kings.

CHAPTER XVIII.

SOCIOLOGY.

Man is the highest example of a social and communal animal, also of the solitary animal, and these two antagonistic inclinations are combined and result in a higher type.

Specialism, generalization, and individualism combine to give great advantage, but reward without service and service without reward and service often with punishment, check human progress.

The specialism enables teaching of those who generalize, and thus the common unspecialized generations start off with all the advantages of a union of what was specialization in former generations.

Individualism often clashes with the inclinations of the race, but the race gets the benefit of the departures from the ordinary.

The social animals preserve the individuality which communal animals surrender. Solitary animals are family groups only, like some of the Asiatics, who will not cohere in tribes which may merely be their own families a few generations removed.

Charles Morris¹ includes these three grades of animal communities, the communal, social and solitary. Among ants, bees, termites and beavers the specially communal has developed; the individual works wholly for the community. At a lower level communism is so complete among the hydroid polyps that the community is an individual.

A toilet sponge, when alive, is a blackish, cup-shaped, fleshy mass. The rotting of the animal part reveals the horny skeleton through the small holes through which rushes the water, conveying sustenance, and through the larger holes, or chimneys, the water is thrown out volcano like. Each little sponge animal has a whip with which it lashes the sea water inward, and millions of

¹ Man and His Ancestors, p. 81.

these animals merely live next to one another, in one sense solitary, in another restricted sense, social or communal, and in this sponge colony we have an illustration of the three forms of existence being practically combined. Other animals in their makeup, their internal anatomy, are essentially the same; that is, the cells composing them are solitary, while bound together, as tribes are in commercial relations, the entire organism existing as a society, and in turn the animal thus composed may be, as regards others of his kind, either solitary, communal or social, or still further combine many of the peculiarities of all three types.

The prodigality of life can be afforded a glimpse by knowing that the numbers of kinds of known insects are 250,000, and this is about ten per cent of the total estimated number.²

Beavers are expert divers and swimmers, and live in communities. Different sea lion families do not associate, but walruses rush to each other's aid when wounded, though they fight among themselves. The Dolphin is playful and sociable. True seals are very social and have a very strong affection for their young, differing from the eared seal. Indicatory that closely allied species may acquire radically variant sociological traits.

Marmots live in large communities in separate burrows in company with owls and rattlesnakes. The brown bear is one of the unsociable sort. Macaws have assembling places at evening before settling down, like the rooks. There is significance in the vulture and eagle being in the same class, and both having filthy habits, and sometimes they are cowardly, though the eagle, only, is selected for national emblems. The scarlet tanager follows fine weather and is shy, suspicious and unsociable, probably its bright colors singling it out for persecution. The placing of sentinels is an interesting animal ability. The macaque of Barbary robs gardens and posts sentinels to watch. Wild horses of the Falklands keep watch over their own herd of mares and kick back strays into the herd. Bees have sentinels, gobies sentinel their nests for from six to nine days. The sea lion stands guard. "The Mascarene tortoises place sentinels," according to Leguat, "at some distance from their troop, at the four corners of their camp,

²Lankester Natural History, Vol. VI, p. 9.

to which the sentinels turn their backs and look as though on watch."

A sentinel among men suffers death for neglect, and in such cases fear emboldens him against the common enemy, hence fear of the tribe may have originated the sentinel, as more to be dreaded than fear of the enemy.

Animals of many kinds are social, even distinct species may live together, as among some American monkeys and united flocks of rooks, jackdaws and starlings. Horses, dogs and sheep may be fond of each other, as the dog is of the man. The dog may be satisfied if his master is in the room and howl dismally if alone.

Higher animals warn one another of danger. Wild horses strike attitudes, rabbits stamp on the ground, sheep and chamois also, sometimes whistling. The leader of a troop of monkeys acts as sentinel; a sociable habit of monkeys is to search each other for burrs or thorns, according to Brehm, while others thought the search was for parasites. Hunting in packs is social. Pelicans fish in concert. Baboons turn over stones together, when too large for the strength of one, to enable getting at insects beneath. Social animals mutually defend each other, and where they fail to do so, as is the case with some men, they have not developed intelligence enough to overcome the indifference to others through selfishness. Bull bison drive cows and calves to the centre of the herd to defend them. Brehm tells of the noble rescue of a baby baboon from a pack of dogs at the risk of the hero baboon's life. Associated animals have an affection for each other which is not felt by the non-social, and sympathy is often poorly developed in some animals, as they may expel a wounded one from the herd; doubtless there is individual development of sympathy here and there among such animals, just as de las Casas was Spanish and an occasional old Roman might have disliked killing his aged parents or deformed child.

The North American Indians abandoned their old and invalids and the Fijians buried them alive if they were not fit to eat. There are instances of an old and blind pelican being kept fat by its companions, and blind crows being fed by comrades. Dogs have occasionally sympathized with sick cats, if friendly with

them, and a dog will sympathize with a beaten master. Baboons tried to protect one of their number from punishment, and a monkey protected his keeper against a large baboon. Dogs possess some self-command, for they may refrain from stealing food in the absence of its master. Cats have been known to refuse food offered to them, but steal the same food when unnoticed. Brehm notes that when baboons in Abyssinia plunder a garden they silently follow a leader, and if an impudent young animal makes a noise he receives a slap from the others to teach him silence and obedience.

There is evidence of the taming of horses by stone-age men, and that wild cattle, from which came the domesticated stock, were plentiful in the forests about London in 1174. Ancient Greeks domesticated the marten and Romans the mullet. In China the turtle is captured by using a sucking fish. Arabs tame lizards. The seal has been tamed like a dog. Falcons were used to catch other birds in feudal days.

Ants enslave one another and domestication can be a species of slavery; the cuckoo takes advantage of the lack of intelligence of other birds to make them nurses for the cuckoo young. Monkeys make pets of smaller mammals. The oriole and ox-pecker are willing servants of the ox it rids of ticks.

The slave-making instinct is inborn, inherited, habitual; it is part of the grabbing nature which every animal shows in some form. When the animal evolves enough to get his living at the expense of other animals, he proceeds to do so. Man tries to make everything else minister to his comfort, and naturally tries to use his fellow men and women. He can be defined as a two-legged animal who tries to make all other animals and men serve him.

"Slavery exists by the law of nature," says Aristotle, meaning that it was everywhere to be found. "It enabled the thinking and leisure class to rise," says Bagehot.

Slaves universally, of all kinds, political, religious, and otherwise, are required to believe that God gave them to their masters.

Puffendorf had taken the ground that slavery was founded on contract. Voltaire said: "Show me the contract, and if it is signed by the party to be the slave, I may believe you."

Slavery exists from the grossest forms of body stealing to the more subtle forms of mental dominating, in some places abolished but in other places still existing. The ants still capture aphides and the Arabs hunt Africans.

Both England and America passed through degrading periods when slavery, not alone of Africans, but, under various pretexts of all kinds and nationalities, even their own, were practiced.

I personally knew a Baptist clergyman in Nashville, Tennessee, whose mulatto slaves bore an unmistakable resemblance to him, and were recognized as his children, and when the Civil War broke out he was confident that the United States would succeed in freeing all slaves. So he sold his own children to planters living farther South. He suffered no loss of respect among his neighbors, who were aware of the financial stroke.

In the latter years of Henry I. the practice of kidnaping men for the Irish slave market was in full career and formed the most lucrative branch of trade at Bristol.³ A hundred years later than Dunstan, the wealth of the English nobles was said to have sprung from breeding slaves for the market. It was in the reign of the first Norman king that slavery was suppressed in its last stronghold, the port of Bristol.

In 959 slavery began to be modified, kidnaping and the sale of children were prohibited. The slave was exempt from toil on Sundays and holy days. Athelstane placed free and slaves on the same plane of responsibility for crime. The slave trade from ports was prohibited, and both church and state endeavored to stop slavery altogether. But the decrease of slavery went on side by side with an increasing degradation of the bulk of the people. The freeman became a degraded villein, dependent upon a lord. In America the presence of negro slaves degraded the white peasants until it was proposed in earnest to enslave these white free men also, as they were not fit to be free. The Virginia newspapers of 1858 to 1862 argued in that way.

"Christianity in the early ages never denounced slavery, but filled the minds of both masters and slaves with ideas utterly inconsistent with the spirit of slavery."⁴ But the bible as taught in

³ K. Nordgate, *England Under the Aagevin Kings* V. I, Ch. I.

⁴ W. R. Brownlow, *Lectures on Slavery*, Ch. I.

the Southern States advised the slave to "be content in the lot to which the Lord had called him," and in other ways was expounded as justifying slavery from Christian standpoints. The Spaniards made use of the aboriginal Bahamans to lure them into slavery. They told them that they would take them in ships to the heavenly shores to meet their relatives, and 40,000 were sent to perish in the mines of the island of Hispaniola. Columbus spoke of these natives as gentle, inoffensive and always smiling.

Bartolomé de las Casas, who became a priest in 1510, deserves great credit for standing alone in his denunciation of human slavery in the West Indies by the Spaniards. He was hated, thwarted and entrapped in many ways.

The Portuguese introduced slavery into Brazil in the seventeenth century, and it was not abolished until Sept. 28, 1871, long after the American civil war. The terms of the Brazilian emancipation were that "the children of slave mothers were free after serving their owners 21 years as apprentices." A general liberation mania followed, indicating that the people were better than their rulers.

Many are the pretexts for practicing slavery and various are the names under which it exists. Transportation, penal colonies, extradition, contract systems, peonage, villeinage, prisoners of war, apprenticeship, and so on indefinitely, all such terms are connected with slavery pure and simple, however disguised. The present Siberia and the island of Saghalien, colonies of Russia, are horrible slave regions for convicts.

The Spaniards maintained slavery in Cuba up to the time of Weyler's reconcentrado slaughters. Peonage as practiced in Mexico, and also in New Mexico, under the United States government sanction, is slavery. The Boers enslaved the Kaffirs in South Africa, and much of the *casus belli* there was the freeing of negroes by the English, though the Cornwall mines contain men, women and children who have never seen the sunlight, through being born and dying in Cornish coal mines. A statement that is not recklessly made. There is religious slavery of both mind and body everywhere to enable a privileged class to live upon the labors of the superstitious. Society permits sweat-shops to extract the lives of unfortunates, and there are multi-

tudes of other methods of greed being glutted at the expense of others.

The Arabs steal men in Africa for the Eastern market, but England is making headway against this traffic there. In A. D. 1897 the British headed off the slave raiders into Nigeria, and generally through west and South Africa the trade is being suppressed.

Under tricky contracts for labor of convicts South Carolina managed to restore slavery in 1901 to a great extent, even, it is claimed, easily convicting negroes for the sake of making slaves of them.

Penitentiaries and war prison pens, some insane asylums and poor houses are often scenes of brutal opportunity where the slaves are given over to political or military masters, who, being unchecked, reveal their animal ferocity and often resort to abuse of the helpless merely as an exercise. The "Daughters of the Confederacy" are said to have objected to Uncle Tom's Cabin being read or played in the South, as it gave false ante-bellum ideas, such as that slaves were not kindly treated. Slavery favors degeneracy. It places no premium upon generosity or rights of others, individuality or high intelligence; the qualities of manhood, are checked. Slavery reacts badly on the masters by destroying their self-reliance. The most helpless creatures are the red ants, who depend almost wholly upon their black ant slaves. Dependence lessens ability to care for self and tends to helplessness and loss of organs useful to the free state. Luxury degrades and in tropical regions where nature furnishes ease and plenty the mind does not develop readily.

There was slavery among the Hebrews of the old testament, and it was very ancient among the Greeks and Egyptians, and in Rome it was corrupting in the extreme.

There was an uprising of slaves in B. C. 133 in Italy, owing to hunger, cold and general despair.

It was a question whether Rome or Carthage was to afford the slaves to the other. Scipio levelled Carthage in B. C. 146, and enslaved its last inhabitant.

During the seven days of the Saturnalia dedicated to Saturn

in ancient Rome, slaves were admitted to equality with their masters.

B. C. 73 there were schools for training gladiators in which there were slaves, abandoned waifs, criminal prisoners and unfortunates generally. Spartacus led seventy escapes from the school at Capua, and gathered a large force of slaves with which he defeated the Roman armies. Finally Spartacus and 35,000 of his insurgents were slain, 6,000 of them being crucified by Pompey. In Gaul slavery of captives was the rule, and under Rome became more systematized and oppressive. Some broke out into brigandage with the free men whose lot was as bad as the slaves. Free may be a mere catch word and not really exist.

In 1085 William of Normandy abolished the death penalty and the slave trade. He loved hunting so much that he swept away villages to make parks for his deer and thousands of peasants were made homeless. He had sixty-eight of these forests. The New Forest in Hampshire was the sixty-ninth, and occasioned the greatest suffering. So it is not likely that his abolition of slavery had any reference to humane considerations.

In A. D. 1100, like all the great revolutions of society, the advance from serfage was a silent one; indeed, its more galling instances of oppression seemed to have slipped unconsciously away. Some, like the eel-fishing, were changed for an easy rent, others like the slavery of the fullers and the toil of flax, simply disappeared. By usage, by omission, by downright forgetfulness, here a little struggle, there by a present to a needy abbott, the town won freedom.⁵

"Mad," as the land owners of England called him, John Ball was, in 1377, the first to preach natural equality. "By what right are they whom we call lords greater folk than we?" "Why do they hold us in serfage?" The popular rhyme of his time asked: "When Adam delved and Eve span, who was then the gentleman?"⁶

In England the numbers of the unfree were swelled by death and crime. Famine drove men to bend the knee in the evil days for meat, the debtor flung on the ground the freeman's sword and

⁵ Green, *ibid*, p. 117.

⁶ *Ibid*, p. 314.

spear and took up the laborer's mattock and placed his head, as a slave, in his master's hands. Criminals became crime-serfs of plaintiff or king. Sometimes a father, pressed by need, sold children and wife into bondage.⁷ There was a papal doctrine of the condemnation of Jews to perpetual bondage, in the thirteenth and fourteenth centuries. In Poland the peasant was always the hereditary property of the lord of the manor, as claimed by the nobles, but this is denied by the common people.

Villeinage serfdom from the seventh to the eleventh centuries was the bondage in which were held those who cultivated the soil.

Rome, Italy and the church patronized slavery down to the sixteenth century. The popes issued edicts of slavery against whole towns and provinces. Boniface VIII, in 1294 to 1348; Clement V, against Venice; Sixtus IV against the Florentines; also Gregory XI against the same people, 1375-1378; Julius II against Bologne and Venice. Whoever captured inhabitants of such places had holy permission to make slaves of them. Rome was the last of Europe to retain slavery. The theological claim was made that original sin deprived man of any right to freedom. By 1450, in the seventy years which had intervened since the last peasant uprising, villeinage had died naturally away before the progress of social changes.⁸

The Barbary States relinquished Moslem slavery of Christians in A. D. 1816. The peasants were freed in Hungary and Austria in 1849. Russian emancipation of serfs occurred by order of Alexander II in 1861, whereby twenty-two million serfs and twenty-six million more peasants who were practically serfs, were "liberated." But their condition is as bad as before.

There is no slavery among the Afghans and some other benighted Asiatics. The institution of slavery appears to have been a step toward civilization, for instead of slaughter of prisoners they were enslaved.

In 1381 what was known as the Wat Tyler rebellion occurred in England, precipitated by a tax gatherer's insult to Tyler's young daughter, though the real cause back of it was the practical

⁷ Ibid, p. 19.

⁸ Ibid, p. 353.

serfdom of the people. With 30,000 men he forced from Richard I, the boy king, letters of emancipation, and the king pretended to favor all their demands. Later, with his army of 40,000, Richard revoked his grant of freedom and said: "In bondage you shall abide, and that not your old bondage, but a worse!" Seven thousand men perished on the gallows, parliament trimmed to any breeze, but the land owners refused consent to free their slaves. So no sooner does William "abolish" slavery than it crops up again later. This has been the world's experience, usually a new name is given it just as tyranny, when overthrown, hides itself behind some new disguise.

In 1382 Wyclif headed a movement for intellectual freedom at the same time Wat Tyler fought for bodily emancipation. The one against taxing the mind out of existence, and the other the body out of sustenance.⁹

A. D. 1395 Richard II till 24 years old was enslaved by his guardian uncle, when he asserted himself. So no human being is less than another liable to slavery in some form or other, mental or physical, peasant or king.

The pride and cunning of the pope in enslaving the English people was the theme of Wyclif and the "Lollards" in the time of Henry IV up to A. D. 1413.

In all this "Christian era" persecution of the Jews went on, especially between the time of Edward to that of Cromwell.

The bastille of Paris was originated to protect against English foes in 1356; it was enlarged by Charles V, and after his death made a prison. Charles VI enlarged it still more, and it was finally destroyed by the enraged people June 14, 1789. The people were inhumanly treated by royalty in this prison.

Soldiers committed suicide under Frederick "the great" to escape the severity of his service.

Queen Catherine of Russia put a guard over a flower in her field, and then forgot both flower and sentinel. Until the time of Nicholas III guards had been placed in the same spot, and all had forgotten why he was stationed there.

Pushkin, the Russian poet, wrote: "A horrible thought fills my soul with gloom; here in the midst of flourishing fields and

⁹ Ibid, p. 302.

hills, the lover of humanity sorrowtully notes everywhere the pernicious signs of shameful ignorance. Blind to tears and deaf to moans, a scourge of men decreed by fate, a ruling class, unfeeling, lawless, wild, appropriates with ruthless rod the husbandman's labor, property and time."

As the Chinaman was forced to adopt the pigtail by his Tartar conquerors as an indication of inferiority, and he now considers it a distinction, so women, handicapped with dresses, cling to their ancient attire as slaves sometimes fought to perpetuate their own slavery and as some Mormon women laud polygamy.

Darwin¹⁰ dwells upon the enslavement of women being universal and dating from remote periods, and even today fathers sell their daughters in Circassia to Moslem procurers, who resell them to rich men.

A race will not advance if one-half is held in slavery as women are by men to a gross extent in such places as Turkey, where the Sultan Abdul Hamid, the oppressor, is the son of an Armenian woman, a race that has been terribly oppressed. What can the union of a tyrant and a slave result in but an Abdul Hamid, the fox, the wolf, the coward jackal, who trembles at the idea of his subjects having education or liberty. So Rome has opposed instruction to children as unfitting them to be controlled in their minds and bodies. The revenues of that gigantic political organization, the Catholic church, came from devotion and superstition imposed upon by a luxuriating priesthood among a people too blind to see for themselves.

The greatest freedom should be permitted to women and natural selection will determine what station they are fitted for. No theorist has ever predicted it.

Woman suffrage dates from 1790-1849; since Mary Wall-land takes high rank in prosperity on account of it. France lacks advance owing to its subordinating women. When they can legislate France will surprise herself by the consequences.

Woman suffrage dates from 1790-1849, since Mary Wallstonecraft published her "Vindication of the Rights of Women" in London, in 1790. the movement has gradually grown. In 1840 a World's Anti-Slavery Convention was held, and woman's

¹⁰ Descent of Man, p. 350.

enfranchisement was taken up. The meetings were sometimes mobbed and insulted, and also denounced by the pulpit. The movement was split in two by rejection of women delegates. The following date certain advances:

1842, Women in the medical profession.

1865, Higher education of women in England.

1869, Progress in Europe and America.

The world over, in Damascus and London, New York and St. Petersburg, women are paid about one-half what men receive for the same service; because advantage is taken of their being weak physically, and unable to assert their rights.

Louis XIV schemed to strengthen the position of the royal bastards by imposing a tax on marriage licenses so exorbitant that the matrimonially inclined preferred living in what was wedlock to their consciences, but concubinage in law. The extortion went to coffers by which the extravagances of the Ducs and mademoiselles were supplied.

Sweat shops are many, where starving men, women and children toil, upon eye-straining work, such as sewing and making cigars, underpaid, sick, abused and even robbed of their scanty earnings by men who are "respected members of churches and society."

Homes are multitudinous where servants are deprived of decent comforts, roomed in foul, damp basements, with no time from their work to clean their own sleeping places. Practically many housewives thus unintentionally, but nevertheless effectually, murder their servants, legally and without compunctions. "Doctor, if that girl is sick, please send her at once to a charity hospital; she cannot stay here," is an often heard request from a palatial domicile, concerning some over-worked servant.

Among dangerous handicrafts it has been estimated that the feather workers for women's hats inhale fine feathers and are occasionally suffocated by them, that 70 per cent of needle polishers, 80 of flint workers, 40 of grindstone makers, and 36 per cent of stone cutters end consumptive. Glass workers, diamond cutters, millers, phosphorus and lead workers suffer also in various ways.

In the seventeenth and eighteenth centuries the factories tend-

ed to prolong the working day, but legislation began in the nineteenth century against it. The usual trick was to knock out the noon rest and then by candle light child and female labor was brought in.

Voltaire held that a government would be worthy of Hottentots in which it permitted to a certain number of men to say: "Let those pay taxes who work; we ought not to pay anything because we are idle."

It is difficult for all and impossible for some to be convinced of our common animal existence. "Fine feathers make fine birds." Strip some of them and what puny, helpless things they are. Similarly with the wealthy, their glitter, finery and power seem to cast them in a better mould than the ordinary. A physician who is familiar with practice among one class of people is often puzzled upon encountering another class as though diseases differed between the rich and poor. Ex-President Benjamin Harrison in a will contest in Richmond, Indiana, asked me on the witness stand if the Chicago asylum was not for the pauper insane, to intimate that knowledge secured among that class could not avail with the wealthy insane. The inability of classes to feel for each other comes of their separation. The miserable sufferings of a pauper dying neglected in a poor house awaken pity only among higher developed persons. Those who can feel sorrow only for tales of pain among wealthy dying amid luxurious surroundings have not evolved to their best capabilities.

In 1903 there were 19,000 slave children estimated in Chicago working 15 to 18 hours a day, and often the parents were to blame. When the Wilkesbarre, Pennsylvania, miners were asked by the arbitration committee how much they were paid per ton they said they did not know, as the settling was made too complicated for them to understand and they took whatever was given them, which enabled a bare existence. Child slavery is said to be taking the place of former negro slavery in the cotton factories of the south, often controlled by northern capital.

Prof. J. T. Hatfield, of Evanston, Illinois, served on the cruiser *Yale* in the Spanish-American war and reported a dis-

position to aristocracy on the part of officers in resenting any respectability among the sailors.

The Syrians are in pitiable ignorance and poverty, the Sultan of Turkey allows only incorrect maps, as he does not wish his people to be informed, and the Moslem priests discourage learning. The forms of slavery are innumerable: the spendthrift is apt to become the slave of creditors, alcohol places the victim in the power of others. Patent medicines enslave dupes and rob them of money and health. Newspapers print lying advertisements and refuse to expose frauds, as they share the profits of such deceit. The English opium trade with China grew to a million pounds sterling per year and in 1842 England forced China by war to resume the trade.

As a result of the stealing of the brain work of others such men as Elisha Gray have been kept in poverty by their enslavers. At the age of 63 he remained poor while others had made millions from his inventions. There died in a southern city, recently, the inventor of the typesetting machine, which is now in use in nearly all newspaper offices. Among the things he left was a pamphlet bitterly complaining about the treatment he had received in regard to his invention and expressly in reference to the charge that there was a disposition to drop his name from the machinery and thus to rob him of his reputation as an inventor.¹¹

Goodyear was starving through the greed of capitalists who tried to steal his vulcanizing process.

Conspiracy is a natural means of combining to accomplish an end and is part of the organizing propensity of man and animals. Politicians and some tradesmen are greatly inclined to make combinations often of a far-reaching and harmful nature. In the average political insane asylum may be seen the employes plotting together to either keep their places, to secure promotion, to degrade some in their way, or to get a chance at plunder which their superiors often seek to absorb for themselves alone. Trustees will plot to get a medical superintendent out of the way if he is too honest to join them in their pilfering, and even the gov-

¹¹ Philadelphia Sat. Ev. Post, Feb. 16, 1901.

ernor of a state has dismissed too honest persons and replaced them by thieves who would "work with the party."

This state of things is not constant nor universal, but at all times and in all places the well-disposed and efficient are plotted against by those who devote their energies and time to selfish ends. Every institution contains such conspirators and they should be sought for and suppressed promptly before legitimate work can be safely done.

Conspiracy is the easiest and commonest performance of men. Rascals float together, as Schopenhauer says, and know one another at a glance. Joan of Arc's record of her Poitiers trial disappeared conveniently for her later judges, and it could not be used at her rehabilitation. Her appeal to the pope was hushed up when it was seen that she did not know how important it was for her.

Gen. Miles was threatened with court-martial and dismissal for calling attention to rotten meat issued to the army.

Cervera was sent to destruction by boodlers in Spain, who, fearing exposure of their steals, refused him a seat in the cortes, as he was under charges for the loss of his fleet. They did all they could to make loss of the fleet possible before he started and tried to kill him to keep the truth from appearing.

Good men cannot combine as do rascals, for it is to serve some conspiracy of profit that draws knaves together. I noticed that when the Dunning asylum exposure was opposed by politicians it drew into the opposition quack doctors, ecclesiastical hypocrites, gamblers, saloonkeepers and the vile of all ranks and degrees.

The Highbinders is a secret society among the Chinese which was originally started to protect their members, but, as so often happens in societies, the purposes were completely subverted and murder and blackmail became the sole object. Oaths binding the members are taken secretly and are given only by the mouth to the ear. A patriotic society ostensibly to free Ireland became controlled by a clique and a few managers were enriched and even went to the extreme of murdering any one who attempted exposure. In Turkey the Sultan is kept in ignorance of real conditions. His grand vizier, Said Pasha, was remarkably honest

and was plotted against incessantly by dishonest courtiers who nearly had him executed once. He is poor, of course. Hassan Pasha, the corrupt minister of marine, is worth sixty million dollars robbed from the navy department, the ships of which are falling to pieces, but the Sultan does not know it. There is a colony in Damascus of the victims of the Turkish Sultan's spy system, the majority of whom are doubtless honorable and faithful officers who were in the way of rascals who fatten upon intrigue and theft. Siberia and Saghalien have received many thousands of innocent persons condemned for political reasons.

Leonard Volk made a statue of Abraham Lincoln for the capital in Springfield, Illinois. It represents the emancipator standing with erect head and behind him is a Roman chair. St. Gaudans' statue in Lincoln Park, Chicago, copies this statue, but moves the figure away from contact with the chair, breaking thus the solidarity, and omits a cloak which Volk placed over the back of the chair and which disposed of otherwise hard lines, and Volk claims that Lincoln did not incline his head as in the park copy. Vinnie Ream's Lincoln in the Washington capitol and French's Liberty of the Columbus Exposition, a figure with a dress made like straight clap-boards on end holding aloft a pumpkin on which is perched a crow, are, with the Christopher Columbus of the Lake Front, which finally went into the scrap heap, typical of the sort of art "statesmen" authorize.

Jason E. Hammond, superintendent of public instruction in Michigan¹² claimed that lobbying occurred in legislatures to induce official corruption of public school instruction in various ways mainly by taking away standard books and substituting foolish ones. A nation cannot be too jealous of interferences with its public school system. There are crafty ancient organizations like the Jesuits who seek in subtle ways to degrade all public and private instruction. Conspiracies to make man an ape again would be for "the greater glory of God," and incidentally fill the pockets of those interested in the wreckage of mankind. And it is to be remembered that not all these conspirators are bad by any means; much good work is done by the

¹² Chicago Times-Herald, Aug. 15, 1898.

charity dispensers of these orders by individuals who are sincere and true in heart, enabling their scheming superiors to point to them and exclaim, "See how good we are!"

A percentage of the result of changing text books goes to publishers who may be the tools of worse schemers.

Crowds are huddled together in New York tenement houses, preyed upon by liquor selling landlords, their families perishing of filth-diseases owing to negligence of local politicians. But these same crowds were ready to murder any one who sought to make things better, because they were owned body and soul by their political bosses. Even the post-office employes have been induced to intercept mail in the interests of politicians, particularly where there was danger of their steals being discovered. This tendency of the abjectly poor to oppose their real friends and patronize their destroyers is like the ignorant rich succumbing to quacks who flatter them, not appreciating the fact that the one who spends his time in learning how to do the most good and be the most efficient surgeon or physician does not loaf about club rooms or attend pink teas, or otherwise conspire to ingratiate himself among the wealthy.

The attempt to suppress Lord Nelson was paralleled by Sampson's jealousy of Schley's destruction of the Cervera fleet. Nelson disobeyed the signal of recall which he never heard.¹³ Jervis, Lord St. Vincent, omitted Nelson's name from his despatch at the instigation of Sir Robert Calder, the captain of the fleet in the battle with the Spaniards in 1797, but after the battle had been won mainly by Nelson, his superior arrived to enjoy what Nelson called the parade of taking possession of beaten enemies, just as Sampson did when Cervera was captured by Schley. It would be charitable to regard the parietic dementia from which Sampson finally died, with its grand delusions, as responsible for much of Sampson's behavior, but what justification has the navy department? Jervis wrote finally: "Commodore Nelson, who was in the rear on the starboard tack, took the lead on the larboard and contributed very much to the fortune of the day." Completely ignoring the fact that Nelson had decided the day at Cape St. Vincent.

¹³ Horatio Nelson, W. C. Russell, p. 73; Mahan, *Life of Nelson*, Vol. I, p. 281.

Mahan (p. 151, op. cit.) speaks in his mild way of Lord Hood having inadequately mentioned Nelson's services in Corsica.

Gulliver captured the navy of Blufescu and the courtiers of Lilliputia conspired to have his eyes put out and to condemn him to starvation. Gen. Fitz John Porter, it is said, was made a scapegoat for Gen. Pope's reverses, and dismissed in disgrace, though acquitted years afterward, in spite of his enemies following him with bitter political hate. Cortez was conspired against in his army in Spain, in Cuba and when he went to Honduras. The treason trial and unjust condemnation of Admiral Hon. John Byng was referred to by Gen. Sebert in the Dreyfus trial, as an instance of an innocent man being executed. Byng was born in 1704, and executed in Gibraltar in 1757. The French said that Byng was shot as a traitor, but the English claim that he was acquitted of treason, but shot for incapacity, though thousands have escaped his charge even when guilty. Pitt tried to save him, as the government had merely given Byng rotten ships. It was the government that was incapable and sacrificed Byng as a scapegoat. It is an old political trick to divert any inquiry of this kind into personalities, and thus call away attention from the real subject.

Sixtus IV, the reigning pope, ordered a conspiracy to kill the Medici of Florence. A soldier had too superstitious a reverence for the church to enable him to assassinate at the very altar, so two priests agreed to undertake the deed and Machiavelli¹⁴ says that the partial failure was due to hardened, experienced murderers not having been employed. Guiliamo de Medici was stabbed to death, but his brother Lorenzo escaped and fought the priests till his assistants came to his aid. The Archbishop Salviati was hanged for the conspiracy by the mob, who favored de Medici. Pisistratus of Athens and the Medici of Florence were cruel tyrants, but beloved by the citizens.

The attempt of Germany to intrigue with Spain by making a pretense of hostile display against the Americans at Manila is remembered, the object being to enable Germany to purchase some

¹⁴ Political Discourses, Bk. III, p. 6.

islands of Spain and at the same time avoid a war with the United States.

Wilhelm menaced little Hayti and imposed an indemnity, for a police brawl affair, which he would not dare to mention to a stronger country. He helped the Chinese against Japan, the Turks against the Greeks, the Spaniards in the Philippines against the Americans, and the Boers against the English in South Africa, yet he collapses when openly assailed. He acts like a bullying school boy or an epileptic.

Krüger fought his own people, intrigued against President Burger and ousted him and marched on Bloemfontein to take the Orange Free State. He escaped from South Africa and left his wife, who died there, while enjoying his ease in Holland. Much of his career resembles the capering of a great baboon.

All of Henry the First's schemes for his succession fell to pieces at his death, as the courtiers thought nothing of such little things as vows, perjury and breaking faith.

Stephen got a servant to swear falsely that Henry I had named him as his heir, whereupon the archbishop of Canterbury crowned him, an instance of manufacturing evidence similar to what is secured in some murder trials by ambitious police and jailers who are anxious to get the credit of securing testimony, even though the prisoner may not be guilty.

Oath breaking was easy enough for kings and courtiers. John and Henry III swore readily and seldom kept an oath or vow. The latter agreed to confirm the liberties of England if parliament voted a large amount. As soon as Henry had the money he defied propriety again.

Ireland was betrayed by King Donald to the English under Henry II, and Wallace was betrayed to the English by a Scotch attendant in Edward I's day.

Under Henry VIII England made a blundering alliance with Spain, and was taken in by that country, which left England in the lurch and made its own terms with France.

The gunpowder plotters against parliament tried to raise the Catholics against James, but were repulsed, probably because enlightenment was greater by that time. History serves some purpose in keeping people advised of the folly of the past.

Parasitism is living at the expense of another without destroying it or doing it service. The tapeworm is not likely to outlive its host, hence it cannot advantage by destroying it. Domestication borders on slavery, and the master may become parasitic upon the slave, as the red ants upon the black, becoming helpless without them. But there may be reciprocal association, as in mutualism. Certain parasitic plants, as the mistletoe, take from the host only the water and inorganic substances derived from the soil. Others, like the dodder, dispense with roots and leaves and abstract the living matter of plants. Parasites do not need a high organization, and hence do not develop one. Mimetic parasitism is where an animal or plant imitates another to be able to approach victims, and is thus a hypocrite and demagogue. Others mimic stronger species to be able to escape enemies.

Sinecurists and beggars are parasites. Those who live on waste products are saprophytes of society, and those who steal are predatory. Mutualists render an equivalent for what they get.

In Rome a community began as farmers and ended in being parasites, the populace being fed by the provinces and the rich depending upon slaves. Tenants who fail to pay rent are parasitic on landlords, but others of that class turn robber and so keep even.

Washington, D. C., is filled with human parasites, not only in civil but in military and naval circles. A senator made it a point to never believe the most plausible stories of these schemers. All of Washington society is honeycombed with jobbers who get soft places in service. Schley was a "sailor-man," one who preferred active duty to soft seats in Washington. Crowninshield and others intrigued with politician Long for easy places. Every place in life swarms with parasites who, like the "coffee-coolers" of Washington, appropriate the pay and honors intended for merit and impudently ask: "What are you going to do about it?" Some of these hunters for positions have been known to even prostitute their own wives in their search for soft places. The honest rank and file of workers are too busy attending to duty to understand what menaces them. Intriguery turns out

the efficient and puts in the inefficient one, who has the adroitness to hang onto the job whether he otherwise fills the place or not.

Goldsmith says there is a great deal of friendliness in the world for those who have become successful, but the rich are beset by parasites, false friends, charlatans and flatterers who turn them against those who have no designs upon them. Often these parasites adopt an armistice among themselves, and agree to attack new comers. Thus the wealthy never see life as it really is, unless they lose their means, and then they are bewildered, for their fictitious world has gone with their resources.

The poor when rich forsake old friends and make new ones, who abandon them on their becoming poor again. The poor are subject to dangers from which the rich think they escape, but wealth attracts new sources of danger in intriguery for its possession.

An instance of social parasitism was where a medical student was absent from home trying to earn enough to go through college, but a minister ingratiated himself and relatives into the family of the student and literally ate him up, so that he had to work another year to make up for his being digested sacerdotally.

Endeavors to rid a community of parasites are not always wise as weeds introduced from abroad as useful or ornamental have become harmful, as the chicory, wild onion and water hyacinth. Likewise, birds and other animals introduced to exterminate pests become in time by their increase or bad habits, worse than the original nuisance. The mongoose was brought from India to Jamaica to destroy rats, and after eating the rats it destroyed domestic and farm animals, fruits and vegetables. A gypsy moth ravaged Massachusetts trees, and the politicians made it the pretext of robbing the state funds, in some cases cultivating nests of moths for the bounty offered by the government.

Half of England and Wales belongs to 4,500 persons, half of Ireland to 744, and half of Scotland to 70.¹⁵ Six owned half of Africa in the Roman Empire. Even Trinity Church, New York, is parasitic, and owns brothels. Westminster Abbey and White Chapel funds own immense real estate properties, which they do not improve. In 1788 there were 1,221,000 parasitic priests, no-

¹⁵ Karl Marx,

bles, officials and soldiers upon 3,800,000 people in Spain. One person supported three. Politicians are parasitic upon the public. Systems may be parasitic and force otherwise better persons to minister to them. A building society may stop the parasitism of speculators in houses for working people. Co-operative societies may dispense with the parasitic middle man, but the department store develops to crush the small trader. Hope can be founded upon the fact that no one is born a social parasite, necessarily, but he acquires that character which is not transmitted. Society is enfeebled by the parasite, and it, in turn, degenerates. Poor organization multiplies parasitism.

Julian Gordon¹⁶ says, "Entire families as well as individuals belong to the group parasitic. They possess a mixture of servility and audacity which diverts. These are the men and women who shine in reflected splendors. They drive other people's coaches, sail other people's yachts, get other people to pay for the parties they give, use their acquaintances as banks, as profitable investments. A lady who belonged to this class went to visit friends in New Hampshire. A few days after her arrival she gave birth to a baby. Her hosts took upon themselves all the expenses of the performance, stood sponsors for the child, and even settled something upon it. They said its mamma had made herself so agreeable. To be an accomplished parasite one must have peculiar aptitudes, a great deal of suppleness, plenty of unscrupulousness, a tough hide. No born leader ever followed successfully. The rebellion of natural imperiousness, the revolt of pride, the anguish of wounded sensibility, have no place with these delightful wheedlers. As we have said, they are perhaps, nay probably, attractive. They fill their niche. They are even necessary."

It was a favorite idea of Pasteur's that it is in the power of men to cause all parasitic diseases to disappear from the world. He had destroyed the grape vine disease and chicken cholera and added greatly to our means of combating filth diseases, but the term parasite is quite broad logically, and from that standpoint man himself is a parasite on the earth's surface. Hebra be-

¹⁶ *Cosmopolitan*, Dec. 1901.

lieved that many of the afflictions of the Israelites mentioned in the old testament were nothing more than the itch, which is a small living parasite, the proper name for which is *Sarcoptes scabiei*, which Hahnemann, the originator of homœopathy, taught was the cause of all diseases, so that a millionth of a grain of an itch mite, on the *similia similibus* theory, would cure all diseases. Yet some think we are not related to monkeys in intelligence. Tape worms, trichina, etc., infest men, hogs and other omnivorous animals, sometimes developing partly in one animal and finally in another, by stages.

Thread worms pass through beetles and develop later in pigs, some are in shrimps and then in fish, others begin in beetles and find their way through hamsters and voles, and some in water shrimp and then in ducks. The sexes of thread worms are generally distinct. Vinegar eels are thread worms living in fungi in paste or vinegar, but owing to chemicals other than wine or beer being used in making vinegar, these eels are seen less now. There is a wheat eel and a turnip eel.

Man plants and animals are parasitic on the earth and everything depends upon something else. The monkey is a tree parasite, the tree on the soil, the vine on the tree, and all are parasitic upon the earth.

What protects one from certain classes of predatory or parasitic organisms invites the assaults of others. The student who avoids social entanglements, for instance, escapes much trouble, but makes new ones for himself. His obscurity may be taken advantage of to steal his work and revile him if he dare to protest. To oppress him by taking advantage of his carelessness and lack of social intriguery.

Parasites desert the bankrupt as rats do a drowning ship. Shakespeare notes that "The great man down, you mark his favorite flies. The poor advanced makes friends of enemies," meaning that the parasite drops away when its nourishment is threatened, and even previously hostile sycophants become friendly with the recently fortunate.

Priests may be mutualists, predatory or parasitic, individually, but the entire clerical system in this age is parasitic upon the com-

munity, for it lives upon the superstition and hopes of the people, and gives vague promises in return. Individual cases may change this, as when a cleric renders valuable services to an ignorant community and it rewards him basely.

The living together or mutual interdependence of animals is designated symbiosis, that between the wolf and badger has been described.¹⁷ Mutualists have been mistaken for parasites sometimes, as the lice on fowls which clean up epithelial areas.

The crocodile bird visits his host to pick his teeth and tongue free from leeches. Buphugas, the surgeon bird, opens cysts on buffalo and removes the larvae; the European starling picks the backs of cattle. Feathers and scales are sometimes kept bright by so-called parasites on birds and fish. Jas. Weir, Jr., describes an organism that eats decayed and unimpregnated crayfish eggs, so a parasitic mutualist is thus possible.

The elands are accompanied by rhinoceros birds, which watch over them and give them the alarm when an enemy is near.

The hawfinch destroys noxious insects, but also steals peas from the kitchen garden. So in many cases the relations of animals with each other may be harmful, beneficial and sometimes a mixture of both.

The coachman fly which destroys the horse fly is said to be welcomed by the horse, and may sit on any part of him, while the horse fly makes him nervous and restive.

The cuckoo is a notorious parasite upon other birds, laying his eggs among strangers and leaving them to be hatched by them, and the young cuckoos ungratefully may cast out the eggs of their foster parents.

Hermit crabs in occupying cast-off shells of mollusks are to a certain degree parasitic, at least upon abandoned domiciles.

Hyenas were dependent upon lions for their food, but their increase near the haunts of men show that hyenas regard man as a better destroyer and purveyor than the lion.

Pilot fish swim in front of sharks and accompany vessels for the feeding obtained.

The honey guide is a bird that leads man to the hives of honey

¹⁷ American Naturalist, June, 1884, p. 644.

bees in forests. It merely seeks the grubs or the young bees.

The Langur monkeys chase tigers and point to them and scream at them to aid the hunter to find them, and they recognize men as allies and friends.

Society among men is founded upon mutualism with a very large history of parasitic "nobility" and priesthood. "Trade never was considered a degradation in Catalonia, as it was in Castile," says Prescott,¹⁸ hence the Catalonians are a finer, manlier race than the majority of the ignorant priest-ridden Spanish.

A phase of mutualism is the potency of propinquity, being near to help or influence. The vulgar idea in destiny controlling marriages, etc., is met by showing that nearness in everything. "The absent is always in the wrong" is one old saw, while Saadi, the Persian poet, sings, "Nearest to the king is dearest, be thy station high or low." The adjacent furnish husbands and wives, and it is the nearest that afford friends. Often next door neighbors find much congeniality and become lifelong friends, where had it not been for this adjacency they could not have known each other.

Whether to beg, to work, to steal, there must be adjacency. The ivy clings to the nearest wall and the other parasites depend upon the nearest support, things trite enough, only there is such prevalent superstition about people being thrown together purposely instead of by accident.

Distance and time dim affection between relatives and friends, and it is seldom realized that absence is liable to undo the work of years of intimacy.

Darwin's statement of female dogs often throwing themselves away on curs of low degree is similar to the fact that girls run off with their fathers' coachmen and teachers' may marry Chinamen, through the same propinquity and familiarity that causes dogs to select mates outside of their station in life.

By recollecting that "no man or measure can be wholly right or wholly wrong," as Spencer says, and further that good and evil, as generally understood, both combined and separately evolve, organize and in time give way to new methods, combinations and workings, there will be less confusion in endeavors to lessen the friction of civilized living.

¹⁸ History of Ferdinand and Isabella.

No new plan for the improvement of business or of those employed can be free from inconvenience or even downright suffering to others. A child cannot be born without blood loss, nor an organization without tearing away from previous established conditions. Often the newly instituted affair will prove of great general benefit while damaging a few who are deprived of former methods of earning. But with all this the intent of the organization may have been rapacious and cruel in the extreme, and counter efforts may also be unlawful and injurious to others until a compromise is effected and adjustment secured on the new basis of working.

Trusts are inevitable, and resemble the tendency of nature in the evolution of the nervous system for the higher or more complex centres to usurp the functions of the lower, and also to establish better correlations of all parts of the organism. It is a selfish method and part of the grab game of the universe, but it eventuates in usefulness to the aggregation and incidentally to the individual.

Until recently but little thought has been given to those "vital processes of spontaneous co-operation" by which national life, growth and progress have been carried on; all thoughts being turned to the actions of rulers.

The differences between such a colony as that of the polyp-corals and separate individuals are merely those of the quantity of units clinging together or separating, but when we analyze the individual we find him made up of parts that are combined to work together, so that after all the colony is an individual, and the individual is a colony, the only difference is in the stopping place of further combinations. A community cannot cohere, much less advance, unless it combines, and history proves that the most practical combinations are those founded upon utter selfishness, for it is an animus readily understood by all mankind, and derived from the ingrained nature of all men and all animals, with the advantage that if any change is likely it will be for the better, whereas institutions founded upon generosity are more than liable to tumble into degeneracy by corruptions of the selfish exploiters.

In 1901 a vaudeville trust formed on a bad basis, which gave

the power to select actors into the hands of one man, who proved to be grossly incompetent and malicious, resulting in lowering the standard of talent on the stage, but the uproar that followed overturned this bad condition of things, and both actors and managers profitted by the changes evolved.

The unsophisticated think that people are combined in business for ideal purposes, whereas some real interest associates them. It is natural to think that charitable institutions are ideal, founded and conducted by generosity and mercy. The founder usually wants to perpetuate his name, or his motives may be superstitious ones, and the place is most often run by a scrambling, traducing, selfish horde of wire pullers, schemers and grabbers, intent upon money, position, power or influence. Life in a hospital will disclose the natures of those highest in control to be most often revoltingly selfish and hypocritical, while among the underlings will be found very excellent men and motives, but such are least fitted to survive in an atmosphere of combinations, liars and haters of superiority.

Combinations tend to increase the wages of labor if labor is alive to its own interests, while cheapening the cost of necessities as well as luxuries to the consumer. Roswell P. Flower holds that "if the Standard Oil Company tried to make $\frac{1}{2}$ or $\frac{1}{4}$ cent a gallon there would be competitors in the field. It is satisfied with $\frac{1}{8}$ cent, so it controls the market and sells all over the world." But the company compromises between raising prices too high and missing its opportunities, by rapid raises far over the limit set by Flower, but following with a drop that would discourage competition. The sole motive of a big organization, such as that, is to get everything it can, and the sole deterrent, its only conscience, is the fear that its future grasp might be shaken were it to raise prices too high. It need not be for an instant thought that there is any intention to benefit the people on the part of the organization; that is purely incidental and often undesirable. Most combinations in nature are of that kind. The only reason the stomach lets the intestines have anything is because it cannot digest all, and the intestines reluctantly yield to the circulation what it cannot use up for itself, but the result is that all organs are nour-

ished by the blood thus selfishly made, just as well as though the process had been a voluntary one.

Organization may be in co-operation for distribution or for consumption, for production, for banking or saving, and if those who contemplate these sorts of combinations will study the past they can derive valuable hints for proceeding. Usually the selfish methods need little study, but when philanthropy makes an endeavor it seldom goes to the records of past attempts but ventures boldly upon a sea that numbers more wrecks than safe voyages.

Tammany has a wonderfully strong and efficient organization based on pure selfishness, as utter as though the members were bandits, and in reality they are, with reference to the community it preys upon. Were it possible to make so powerful a corporation to benefit, instead of to rob, communities, as much good might result as Tammany does harm. But fancy blackmail being used to accomplish good ends. Any sort of society, no matter what its aims, is more than likely to fall into the hands of fools or rascals, and its original objects be completely forgotten, ignored, or reversed. Spencer notes the tendency of societies to eventually subvert the very objects for which they were founded.

The usual secret society varies in its effects upon the community for good or harm. Indeed, the same order may have branches of opposite natures. Some lodges run to parade and hysteria. One spends a large sum on funerals and gives nothing to the widows; others educate the orphans, and still other societies like the crusading Templars of England and the Janissaries of Turkey merit the destruction that overtook them.

State employment bureaus facilitate the securing of places, but of course as these favor the unorganized who have no influence with legislators, and as the average employment agency will fall into disuse and lose its fees, usually made at the cost of wrong and suffering by charging in advance for places which are not secured, there is passivity of law making in this line, with active opposition of the selfish employment agent and apathy on the part of the citizen.

Among many needs for better organization of medical men appears the corrupt legislation secured by quacks, who buy up legislators to enable them to rob and murder the people unin-

formed in medical matters. Physicians should also recognize the fact that surgeons are poor prescribers and poor diagnosticians, outside of cases requiring surgery, and often this latter is resorted to improperly because occasionally the surgeon has made a mistake in diagnosis. Surgeons concentrate their attention upon their special field and cannot find time to develop in medical lines, any department of which is a life study. More soldiers during war die of disease than are killed by wounds, yet surgeons are selected rather than physicians, when both branches of medicine should be employed. The following figures show the relative numbers killed and those who died by disease during wars :

Crimea, 4,602 killed, 17,600 died from disease, English side.

Civil war, 93,969 killed, 186,216 died from disease, on Union side.

Spanish war, 454 killed, 5,277 died from disease, American side.

African, 3,000 killed, 6,000 died from disease, English side.

Approximately, from the best accessible statistics, which if faulty numerically are not liable to be in regard to the relative proportions of deaths by wounds and disease.

Gigantic combinations are being daily arranged in the United States and the pronounced expression of the voters in Chicago and elsewhere for municipal ownership shows that a sociological government is dawning, for trusts will pass finally and naturally into the government control, and as the initiative and referendum is also demanded, the present liability to corrupt administration will be greatly lessened and civil service administration, when jealously looked after by the people to keep it out of the hands of professional politicians, will make the coming government much better.

The government may thus make a syndicate of trusts, but previous to this there may be formed groups of such combinations, a developed aggregation of them for trade purposes. A brokerage of trust stock, such as sugar, coffee, matches, railway, etc., may finally pool, so as to afford a certain and safe income to the investor in the heterogeneous thus made homogeneous. One stock may be at 200, another at 98 and so on. The brokers who combine to prevent loss to investors, taking their profits currently, may be supplanted by government, and the result will be even

better than what exists in New Zealand, where some very good legislation enables prevention of sharky methods, saving the poor from being imposed upon, hence none becomes very rich or very poor.

But an unenlightened people cannot be protected against the results of ignorance, for the inevitable scoundrel will find some way to enslave them, and there is necessity to exert self-control, such as France seldom displayed when her government grew weak. As Spencer says: "If the sentiment of subordination becomes enfeebled without self-control gaining in strength proportionately there arises a danger of social dissolution."

Some of the progress secured through division of labor may be recognized when a person has developed in one line of work and is suddenly forced into another line, even though unpleasant for him, the world receives the benefit of the change, as it brings to a new field methods from the old one, which otherwise would not have been secured; so as in the case of a machinist turning carpenter or a chemist becoming a farmer, new ideas and processes start the world off on a more developed plane. The heterogeneous becomes integrated anew.

Organization is inevitable for among a passive people some are brazen enough to lead, the rest follow the clamor rather than reason, often against reason.

Vigilance may ensure liberty. The French provinces that rose against the salt tax were let alone; friends who visit patients in the worst political insane asylums or hospitals protect them from abuse. Systems that guard money are more likely to prevent theft than trusting to general honesty. Clients who handle their own money instead of letting lawyers do it, and authors who publish their own books, are more likely to secure what may be due them. Municipalities organized against subsidy grabbers are apt to escape looting.

A set of miscreants may be organized and succeed in robbing the people in their particular way, but through jealousy or to call away attention from their own operations, they are pointing to other methods of wrong doing, just as a sensational newspaper advertises quacks and patent medicines, but editorially adopts a high moral tone. Go to a newspaper proprietor and ask him to

refuse a murderous, debauching quack medicine advertisement, and he will gaze at you astonished at your impudence or fool reform notions. Another newspaper proprietor every particle as cruel and selfish may denounce the nostrum as dangerous, if he knows enough, if he cannot blackmail the quack into giving him an advertisement. So intelligence may, in the absence of morality, here and there lift the condition of the common people.

In the thirteenth century trade, merchant and craft guilds in England instituted terrible class oppression and robbery of the poor. The continent also had its fierce struggle of this kind. The crafty few enslaving the simple many. In Köln the craftsmen had been reduced to almost serfage. This tyranny of class over class brought a century of bloodshed to Germany.

In 1902 the city of Chicago gave police protection to the meat trust against the striking teamsters; the trust raised the price of meat and practically lowered the teamsters' wages, whereupon the Chicago Federation of Labor accused the packers of conspiracy to rob the community, claiming that for many years the meat packers had tapped the public mains and stolen the city water, evading equitable assessments of the property by bribing officials, furnishing rotten meat to the soldiers in our late war with Spain.

Many animals, as in some instances the crows, have organizing power, drilling their young and making pilgrimages together, though such things are common to other species as well. Maurice Maeterlinck¹⁹ tells of the bee community regulating the number of births, controlling the policy of the queen, and preventing her from murdering her own offspring, but in times of hunger the workers may slay the whole imperial brood. Division of labor is extreme among the bees. Unlike the Aryans, who drove out their young to find new homes, the old bees sometimes leave the hive to the coming generation and fly to new fields of labor. The lazy drones are tolerated as the only males, but when too numerous are conscientiously slain by the neuter workers. So sex becomes specialized against work. The breeding business exempts the breeders from other labor. Ants are somewhat similarly organized into workers, soldiers, breeders and slaves, with domesticated aphides or plant lice for cows.

¹⁹ The Life of the Bee.

The extreme differentiation of labor would not be so harmful by cramping the faculties upon some special narrow line, were the laborer permitted to profit by his work to an extent enabling him to do more work in less time at better pay, with shorter hours, enabling him to develop himself intellectually.

Nature menders would do well to look on and observe how sociology evolves; step by step the unrest of the unemployed fights the greed of the employers. Step by step the defalcation of untrustworthy employes are met by repressive detective insurance organizations, and gradually thief-catchers rob the thieves so much that the latter turn honest in self-defense. They realize that in their particular cases honesty is the best policy.

Formerly 6 in the morning to 6 at night was the wage-earner's time, and is yet for many; now 8 to 5 includes the hours for some craftsmen, an improvement brought about by strikes and compromises, often where for awhile one or the other side would be unjust or too exacting, and sometimes both sides were wrong, until time adjusted matters, whether the result were good for both sides or not. But there are millions unreached by the change, because the fight was not for them.

Industrial disturbances were widespread in 1895 to 1897, and there were bread riots in South Italy in 1898, but multitudes of such things, as Green notes,²⁰ as the fights of the guilds for supremacy in Italy and England, practically trusts, with labor uprisings, date from the earliest times.

An agrarian law of the Romans was popularly misunderstood as making all land common property. The public lands only were distributed by agrarian law, and these were originally conquered lands.²¹ But much of this suggested holding all land in common is a proposed reversion to far-off savage methods impossible at this stage to adopt.

The agrarian league in Germany wants the state to buy and sell the foreign grain and to fix the selling price.

The platform of the socialist labor party accused wealth of enslaving women and children.²² This arraignment might just

²⁰ History of English People, p. 248.

²¹ H. G. Lidell, History of Rome, Bk. II, Ch. VIII.

²² Larned's History, Vol. VI, pp. 6 and 9.

as well have been carried back to our ancestry. It is from them we have inherited the disposition to enslave when we can. The poor is the slave because wealth is the more powerful; nor is sufficient consideration accorded the fact that slave and enslaver would change places very readily if their opportunities were reversed. Generally the poor man grown rich becomes a ready worker of slaves, and the rich man grown poor is as easily imposed upon; therefore, the trouble is not between capital and labor so much as it is inherent in the animal human nature.

The blacklisting by railways of all employes of the American Railway Union, or who quit work during the big strike of 1894, resulted in the refusal of employment for them by all roads.

Good men may honestly sustain bad systems, and bad men may be in good systems. It is the system that is usually pernicious, though even the best is capable of perversion. An honest priest may do good to his flock while his church seeks only political success and wealth. The insurgent order of junior mechanics claims that the old order, which aimed to protect public schools from plotting Jesuits, was perverted by money making schemers.

Both sides in organizing contests are often grasping, and the well meaning are made to suffer for the malevolence of the few rascals. Sometimes a striker may maliciously destroy his employer's property—a foolish thing to do from any point of view. Then a coal trust has been accused of blowing up its own property to turn the tide of popular sympathy against strikers it accused of felony.

Some employers find that the best way to defeat a union is to pay better wages and give shorter hours than are demanded by the union. This is not always possible, and by remembering the beautiful sameness of human nature, whether exhibited by trusts, unions, rich or poor, capitalists or laborer, the good or bad in each may be looked for, rather than expecting the right or wrong to be all on one side.

A very long step toward satisfactory settlements of labor and capital disputes was made in New Zealand in 1894, in making arbitration compulsory. It is reported that the very best conditions for both sides have sprung from the method in practice.

The selfishness of both parties now finds remunerative exercise in upholding the law and jealously preventing any attempts to violate it.

With economy of production the wages of labor should advance, but of course organized selfishness will pay as low wages as possible, and until compelled to do so in some way. The employed can profitably combine to secure just pay, but attempting to dictate who shall be employed does not always secure the best results to themselves or employers. England is suffering from labor organizations being constructed on unwise lines, but it is natural to meet hoggish control with hoggish opposition.

The cost of articles is the first to rise and wages are the last to rise because the employers are quite willing to accept the better price from the public, but they are not willing to part with any of this good fortune to those who help them to it, their laborers. Some notable exceptions occur, but it is not the rule to promptly raise wages as increase in receipts would justify.

The coal miners' strike in Pennsylvania in September, 1900, was due to the owners paying small rates per ton and counting 3,000 pounds to the ton and charging high prices for powder to the workmen, \$2.75 a keg, when it could be had for \$1.10. Intemperate workmen also want the stores abolished, so they can get pay instead of store orders. Intemperance is sometimes caused by the hopeless condition in which workmen may be held, as the sole ambition of the Russian moujik is to remain constantly drunk.

As an instance of the tyranny of some workingmen's combinations, it is worth mentioning that four men were discharged from a cash register factory in Dayton, Ohio, which was arranged on the most approved sociological lines of profit sharing and comfort for employes, whereupon all the workmen struck. The workers' happiness and welfare were the main ideas of the establishment, but they denied their benefactors the right to discharge those they had once employed. But this is met with general denials.

Thus most unexpected failures of social communities constantly occur through selfish old human nature cropping up in unanticipated ways.

People earning meagre livings are apt to be indifferent to combinations in their own interests until forced into them by fear of extermination. The Netherlanders did not efficiently combine against Philip II of Spain till he planned to kill every Dutch man, woman and child, "for the greater glory of God." The renegade, the traitor, the informer is invariably present to thwart reforms. Men are more apt to combine for mutual profit, regardless of injury to others, than for self-protection. When it becomes profitable to rob the robbers, then spring up the robbers of the robbers. In America the organizing faculty is not with the people, but with the politicians. As a survival from monarchy days, the people expect the natural rulers to take charge of everything; hence we have a special ruling class from the slums, and a submissive, groveling ruled. The people do not know their rights nor how to assert them; the politicians study how to run the complex machinery of government and scheme to make the people puppets.

The guilds beginning with the Norman conquest united trade interests, finally expanding to take in town government often. The chamber of commerce is the successor of the guilds. The Hansa towns, meaning corporation, during the fourteenth and fifteenth centuries, comprised 60 to 80 cities of Germany, strong enough to resist powerful monarchies, but kings and popes tried to destroy them.

About 1600 a little book appeared anonymously in Germany, entitled "The Discovery of the Honorable Order of the Rosy Cross," from which came the term Rosicrucians. It contained dialogues between seven sages of Greece as to the best method of general reform in those evil times. Seneca suggests a secret confederacy of wise philosophers who shall labor everywhere in unison for this desirable end, and the idea is adopted. Their sole aim is to diminish the fearful sum of human suffering, to spread education and advance learning, science, enlightenment and love.

Quacks reaped a harvest by perversions of this work of Andrea, the author. Imposters pretended to belong to the fraternity, and found a readier sale for their nostrums. Andrea had great trouble in trying to undo what scoundrels had built upon

his good work. The word Rosicrucian came to mean all sorts of occult humbug.

The Utopia of Sir Thomas More was a fiction of high originality which caused discussion and thoughtfulness concerning social organization. The Republic of Plato no doubt furnished More with the germ of his perfect society. Swift was indebted to More for many of his ideas. If false and impracticable theories are found in Utopia, says Hallam, this is in a much greater degree true of the Platonic Republic, and they are more than compensated by the sense of justice and humanity that pervades it and his bold censures on the vices of power. These are remarkable in a courtier of Henry VIII, but in the first year of Nero the voice of Seneca was heard without resentment.

Kirkup holds that the state has the right to correct inequality of wealth by taking from those who have and giving to those who have not. This would immediately paralyze all commerce and result in starvation of every one, the lazy and dishonest would receive the results of industry and thrift. Lavelye spoke of greater equality in social states, Von Scheel defined socialism as the economic philosophy of the suffering classes. Collectivism denotes managing all affairs in a collective way.²³ In 1720 to 1800 trades unions began in England, and Rousseau, Mably, Morelly and Baboeuf in France suggested social schemes. The latter, in 1796, projected an insurrection, and its leaders were executed. In 1773 Ann Lee, the Shaker founder, said a revelation from heaven instructed her to go to America. She preached and performed cures and the Shakers claimed equal honors with Christ for her after her death in 1874. They were celibates and communists.

Robt. Owen, 1800-1824, experimented as a philanthropist at New Lanark, and demonstrated the correctness of his methods, while he was at their head, and benefited 2,500 unpromising people thoroughly. The English church and state condemned him and defeated his plans. He was a good man crushed by ignorance and rapacity in high places.

A community at New Harmony, Pennsylvania, was started by

²³ T. D. Woolsey, *Communism and Socialism*, pp. 1 to 8.

George Rapp in 1805, moved to Posey County, Indiana, and sold out to Robert Owen in 1824 for his New Lanark community. There are but few members, and the property is worth two million dollars or more.²⁴ They sold, rented and gave away the houses and lands and returned to individualism.²⁵ In 1816 began English co-operative movements. Count Henri de Saint-Simon was the founder of French socialism in 1817. His ideas were vague but to the effect that industrial chiefs should control society and science direct religion. In 1832 began Fourierism, in which association is the central idea eating and cooking in common, but private property was not abolished. The scheme finally failed by 1847. Proudhon, 1839, held that property was robbery and founded the individualistic and communistic anarchism of the present day; he advocates "mutualism" in his last work. The anarchist would banish all rule and have perfect liberty, such as beasts enjoy, to eat one another. Anarchists prefer marriage, not for life, but during convenience; the average unrestrained anthropoid would turn his wife and children on the streets when tired of them. The individualists would destroy all government with fire and murder and laborers are to take everything, then organize themselves.²⁶

In 1840 Louis Blanc advanced a scheme of co-operation with state aid. The French government permitted the plan in 1848, and all but 56 of the associations failed by 1875. The one remaining is that of the file cutters.²⁷ *Icaria*, in 1840, was a romance by Cabet, leading to communism, a remnant of which is in Adams County, Iowa, existing in a modest, slender way.²⁸ In 1841 Brook Farm was started at West Roxbury, near Boston, remodeled on the Fourier plan, and in 1847 failed and sold out. In 1843 the Ebenezer and Amana communities were founded on "inspiration," and they are said to thrive. Karl Marx advanced his theory of capital and his socialistic influence is very great. As to the collectivist creed Marx looks upon history as

²⁴ C. Nordhoff, *Communistic Societies of the U. S.*, pp. 63, 91.

²⁵ J. H. Noyes, *History of American Socialism*, Ch. IV.

²⁶ H. L. Osgood, *Scientific Anarchism*, *Pol. Sci. Quar.*, Mch., 1889.

²⁷ Laveleye, *The Socialism of Today*.

²⁸ A. Shaw, *Icaria*, Iowa.

ruled by material interest and sees in the development of economic production a conflict of classes. He thinks capital is stolen from the laborers. Profit sharing experiments have been most numerous in France and America. In 1848 the Oneida (New York) Community was founded by J. H. Noyes, who advocated a community of goods, wives and children. He had crude notions of improving the stock by what he called sterpiculture, resulting in feeble-mindedness and the failure of the community. Co-operative movements in Germany extending from 1848 numbered in 1884 one and a half million members, and succeeded in many ways.

In 1859 the social palace of Guise was begun by M. Godin on a profit-sharing plan. The stove foundry began in 1840 with twenty members, now has fourteen hundred at Guise, and three hundred in Belgium. It is an organization for mutual help.

Nihilism began in Russia in the year 1860, through a few young men studying Hegel. They wish to destroy every form of government. In 1862 the Internationals of Europe began to plan emancipation by the workers themselves. They failed in a few years. In 1866 the Granger, or Farmers' movement, arose, with three-fourths of a million members, gradually lessening since 1875. Harris, a bigot, started a religious Brocton community in 1867 on Lake Erie, which broke up in 1875. In 1869 the Knights of Labor started, in 1872 the Internationals of America, which were terminated by the Chicago riots of 1886. In 1880 Henry George suggested the confiscation of rent, and originated the single tax movement. In 1883 the state socialist measures were started by the German government, with the sickness insurance law of 1883, accident insurance in 1884, an old age insurance in 1889. New trade unionism developed in 1887, and in the next year Bellamy's book and the materialist movement appeared, ending in smoke. In 1894 the American Railway Union arose and the great Pullman strike followed, with the Coxey tramp march upon Washington.

Speculative communism began in B. C. 600. Plato favored it, and in his "Republic," Socrates not only advised goods but wives in common. Maybe he wanted Xantippe to be generally appreciated. Socialism, communism or collectivism, has regard to the

common weal. As used by the French and Germans, collectivism means industries managed in the collective way instead of separately and by individuals.

In most cases these communistic schemes have been enthusiastically advanced by men with one idea, ignorant but honest, and really feeling that they were inspired, or had fathomed the secrets of the universe. It is notable that religion binds people together more closely through substituting hopes of reward in another life, making them submit to inconveniences here more readily, and finally habit may make them adjusted to the communistic life, however silly or peculiar it may be. Of course there are numerous advantages mixed with the most foolish of these schemes. The Rugby colony in Tennessee was too good to last. Several Mexican projects have waxed and waned, often ending in one man owning all the property and making the rest work for him. The Overcomers of Jerusalem started in Chicago, terminated in a female bossing a lot of swindled converts whom she now works as slaves. A treasurer of the scheme remained in Chicago with wealth enough to console him for absence from the holy land. Dowie has a Zion in Illinois, and a notable kingdom of about the same sort existed on an island in Lake Michigan in early days; the people becoming bandits, were driven out by adjoining citizens. The quakers and shakers are the most thrifty and harmless of such gatherings, but they are gradually passing away as sects. Such organizers as succeed in accomplishing great changes apparently for the better, seldom if ever leave progeny equal to them, as in the case of Charlemagne, Cromwell and others. The industrial communities such as Sir Titus Salt founded do great good and are filled with happy, contented people. Probably some of the various profit-sharing enterprises are the most practical and productive. Marshall Field of Chicago is said to be one of the most just business men in the world. He gives fair salaries and has numerous partners in his various departments who have been promoted for efficiency. Those who have an interest in working with you are more to be depended upon to advance the general business than dissatisfied employees. The various communistic schemes have in some cases done away with family life, others have antagonized governments and been pre-

mature, or the head of the affair ran afoul of ancient vested interests and was suppressed, as was Robert Owen; many schemes have thrived through the energy and strong individuality of those at the head, to die with them because their guidance was lacking. Most of the plans have contained childish business or scientific ideas, and some, like that of Louis Blanc, might succeed in part and be adapted to one particular sort of business and not to others. A few, as in Germany, succeed, though their founders may perish in want, as did Schulze, who impoverished himself to carry out his co-operative movement. He believed in self-help rather than state help. His society of a million and a half members has a reserve fund of three hundred million marks. The vast majority of these movements, particularly in America, gradually dwindle, as the occasion for their starting passes. Enthusiasm dies out, or some fool or rogue gets at the management. No infallible system has been yet described. Like everything else in the universe, natural selection and survival of the fittest will determine whether a scheme of the sort will succeed or not, and as much depends upon unforeseen conditions, chance obstacles or favoring influences, prospects seem discouraging, though patient study of the history of previous schemes and the reasons for their success or failure, together with due regard for old animal-human nature, offer more encouragement to philanthropists. Bellamy's ideal people were not of this world; they were too good to be true. What would happen to them if one of our peanut politicians lived among them?

Animals generally educate their young, apes and birds especially. Among those who educate themselves are cats, who learn by experience to pay no attention to their reflection in a looking-glass. Huxley observes that education begins with birth and that we would know little indeed if all we knew was what we got from the schools. One has to learn how to cross a street without being run over. As for schools, it is not the love of learning that fills them; it is the advantage to be derived from mastering some subject, or, rather, to secure the diploma or certificate, whether mastered or not, or because compelled to become schooled against desire. Carlyle says, "the true university of these days is a collection of books." Physical force was requisite to the teacher

of the early part of the last century, and survives in some places today.

Education helps us to unlearn, to tear down old reflexes, and to dissociate what has been integrated in the brain. It often is as difficult as ripping up anatomical structures, and this is exactly what education does, or often tries to do, but fails because age or ignorance makes such structures too secure.

Education also builds up reflexes in a brain, leading to expertness and facility of working, or, as Ruskin observed, "The moment a man can really do his work he becomes speechless about it." The French divide students into *auditaires* and *visuaires*, or those who learn by hearing or visual impressions, and it is a fair division. Lawyers may be observed who can prepare a case from study of books, mainly; others prefer to hear evidence and think the case over in auditory terms. In court, in the trial of a case, a suggestion to a *visuaire* is best made in writing, an *auditaire* prefers to hear the expert's suggestions. What is learned in youth may become more vivid with age, so the usefulness of life may be increased by teaching children scientific matters such as chemistry, physics and biology, for they will impart a logic obtainable in no other way. Old methods have served their time, a technical skilled training which enables a living to be secured should be first and foremost; the ornamental, according to Spencer, may be added later. Huxley's suggestions for education²⁹ favor lectures, demonstrations and examinations, and he makes the valuable observation that "the better a lecture is as an oration the poorer it is as instruction."

Education of the young occurred in ancient Egypt according to rank; priests taught their children writing, astronomy and mathematics. Moses was thus educated. The ancient Chaldeans were literary. China had universities in remote ages. Persia, Judea and Greece taught their children. Scholasticism was rife in the later Roman empire and consisted in chatter about chatter. That theology is the only philosophy is a survival from such days. Charlemagne and King Alfred were eager to extend learning. The latter is said to have founded Oxford, but there is no proof

²⁹ Lay Sermons, p. 110.

of the existence of that college till a hundred years later. The University of Paris was founded in the twelfth century. The cathedral and conventual schools created or restored by Charlemagne, became the means of preserving that small portion of learning which continued to exist. They flourished most, having had time to produce their fruits, under his successors, Louis the Debonair, Lothaire and Charles the Bald. Rabelais managed, under the guise of humorous indecency, to spread some ideas among the priest-ridden populace, of the extent of their swine-like submission to tyranny, A. D. 1552. The treatise on Causes, of Giordano Bruno, a sort of pantheism, led to his being burned at the stake in 1600. The essays of Montaigne in 1580 make an epoch in literature through their influence upon opinions in Europe. He popularized many forms of thought previously confined to a few.

As early as the sixth century, when France and Italy had sunk into deeper ignorance, the Irish monasteries stood in a very respectable position with regard to learning.³⁰ The influence of the church upon learning was partly favorable and partly the reverse. The venerable Bede compiled the literature extant in his time early in the eighth century. A desire for knowledge increased. The tenth century was darker in Italy and England than in France and Germany, though ignorance abounded in Europe generally.

The progress of learning, however, was not to be a march through a submissive country. Ignorance, which had much to lose and was proud as well as rich, ignorance in high places, which is always incurable, because it never seeks for a cure, set itself sullenly and stubbornly against the new teachers. In place of the silly books in favor, philology and real science were threatened. "Through all the palaces of Ignorance went forth a cry of terror at the coming light." One man above all the rest, Erasmus, cut them to pieces with irony and invective. They stood in the way of his noble zeal for the restoration of letters. Erasmus was soon in a state of war with the monks and in 1518 inveighed against them in notes to his New Testament.³¹

³⁰ Eichhorn, Vol. II, p. 176.

³¹ Hallam, Literature in Europe, Vol. IV.

The Jesuits established their first school in 1540 in Valencia under Francis Borgia, and this was the commencement of that vast influence they were speedily to acquire by the control of education. They began about the same time to scatter their missionaries over the East. Men saw in the Jesuits courage and self-devotion, learning and politeness, qualities the want of which had been the disgrace of monastic fraternities. The dangers of their system were yet still too remote to excite popular alarm.

Fenelon was the pioneer in 1688³² concerning the matter of female education, and this was the cause of his becoming preceptor to the grandchildren of Louis XIV. He noted that a child learns much before he speaks, so that the cultivation of his moral qualities cannot begin too soon. He complains of the severity of parents and deprecates the use of punishment for children. He advises the use of the pleasanter aspects of religious instruction. He is indulgent, his method is a labor of love, a desire to render children happy for the time, as well as afterward, and "he may perhaps be considered the founder of that school which has endeavored to dissipate the terrors and dry the tears of childhood."³³

"I have seen," says Fenelon, "many children who have learned to read in play; we have only to read entertaining stories to them out of a book, and insensibly teach them the letters; they will soon desire to go for themselves to the source of their amusement."

He thinks that the natural, just ways of thinking of children should be encouraged instead of warped as they are by contact with the blunders, ignorance and malevolence of the world. He, however, does not favorably regard teaching science to females.

Rousseau, in 1762, attempted reformation of education in his pedagogic romance "Emile," which created a great scandal, and the Bishop of Paris aimed an encyclical letter of twenty-seven chapters at the book, and Rousseau had barely time to fly for his life. His book was burned by the executioner. Basedow, Pestalozzi and Fröbel were inspired in their labors by "Emile." Rousseau's idea was to unfold the powers of children in due pro-

³² Sur L'Education des Filles.

³³ Hallam, op. cit.

portion to their age, to teach observation, self-reliance and to reason, and to rely less upon "authority." The church saw danger in awakening reason. Pestalozzi, in 1798 to 1827, in Switzerland, said: "Nature develops all the human faculties by practice, and their growth depends on their exercise." "The circle of knowledge commences close around a man and thence extends concentrically." "Force not the faculties of children into the remote paths of knowledge until they have gained strength by exercise on things that are near them." "There is in nature an order and march of development. If you disturb or interfere with it you mar the peace and harmony of the mind. And this you do if before you have formed the mind by the progressive knowledge of the realities of life you fling it into the labyrinth of words and make them the basis of development." "Schools place words first and thus secure a deceitful appearance of success at the expense of natural and safe development." He sought the interest of his pupils in their lessons, and wrote the book "How Gertrude Teaches her Children." "Training is everything. The peach was once a bitter almond; cauliflower is nothing but a cabbage with a college education."³⁴

There is no absurdity so palpable but that it may be firmly planted in the human head if you can only begin to inoculate it with an air of great solemnity. For, as in the case of animals, so in that of man, training is successful only when you begin in early youth.

"Noblemen and gentlemen are trained to hold nothing sacred but their word of honor, to maintain a zealous, rigid and unshaken belief in the ridiculous code of chivalry, and if they are called upon to do so to seal their belief by dying for it, and seriously to regard a king as a being of a higher order.

"Again our expressions of politeness, the compliments we make, in particular, the respectful attention we pay to ladies are a matter of training, as also our esteem for good birth, rank, titles and so on. Of the same character is the resentment we feel at any insult directed against us, and the measure of this resentment may be exactly determined by the nature of the insult. An English-

³⁴ Mark Twain.

man, for instance, thinks it a deadly insult to be told that he is no gentleman, or still worse that he is a liar. a Frenchman has the same feeling if you call him a coward, and a German if you say he is stupid.³⁵

Generalizations arise from abstractions of particular observations. So if we learn otherwise than through experience we get distorted notions. Schopenhauer speaks of experience as the natural and teaching as the artificial means of learning. General ideas driven into memory before the special are learned cause you to see the world falsely. As when one travels late in life he finds all his preconceptions full of mistakes and it may be too late to correct them. This is why "common sense" is lacking in men of "education." Facts should be first acquired as nearly first hand as possible and generalizations formed from them later. Children should be compelled to understand every word they learn before being allowed to use it. Otherwise knowledge may be mere verbiage. Preconceptions are often so deep that a man will shut his eyes to facts and refuse to see what contradicts his false views obtained from others. At least the child should be taught to verify the facts taught. It would learn to measure things by its own standard rather than by another's and thus escape a thousand strange fancies and prejudices and not have to unlearn so much. So it often happens that the neglected waif has an advantage in not being falsely instructed but in having been enabled to see things for himself, and the incredulity and scorn of false notions he acquires comes from that.

Previous to Lamartine the style phraseology and language in France was moulded after certain models. Poetry and literary language was copied after the classics of Greece and Rome. Art was subservient to old methods and measurements notwithstanding the glaring falsifications of nature comparable to the conventional tracings of Egypt. Sculpture and painting was bound to certain silly methods such as giving human eyes to horses and making bodily parts equal to so many heads. Malebranche³⁶ was an admirer of Descartes, though acknowledging no master.

³⁵ Schopenhauer, *Studies in Pessimism*.

³⁶ *Recherche de la Vérité*, 1674.

Error he held to be the source of all human misery, he had some ideas as to the relations of the fibres of the brain to thought, a connection between brain motions and the operations of the mind, crude as these ideas were they were in advance of the notions of his day. Pascal laid down geometrical rules for reasoning.

"The intellectual standing of any civilized nation depends upon two things, the preservation in books, in memory and in works of art and industry of the ideas of ancient workers and thinkers and the mental activity of living thinkers and inventors whose work takes its start from this standpoint of stored up thought. Rob any community of all its basic ideas and it would quickly retrograde to a primitive condition of thought and organization from which it might need centuries to emerge."⁸⁷

The dangerous consequences to religion and morality are urged in refutation of certain ideas. No matter if the ideas are true the lie must stand. The universe would fall to pieces if bound together with such bonds. Immoral means, jesuitical means must be taken to establish puerile conceptions of so-called "right and wrong."

Universities should give free instruction in all branches. There should be no charge for tuition. Chairs should be endowed and professors selected for their abilities. At present the building is everything and any sort of a figure-head will answer for a teacher if he has the influence to secure the place. Moreover, the great donations to universities enable the wealthy to have a wide curriculum, while the cause of general education is only secondarily and remotely and insufficiently helped by university extension methods which seldom reach the parties most to be benefited.

Vested interests crop up in shaping the teaching in schools. Occasionally an honest, well-informed professor will be admonished by his designing colleagues that his lectures hurt some special interest, and he should not continue on that line. Darwin, in his autobiography, says that at the University of Edinburgh he found the instruction in several branches incredibly dull, and considers his time at Cambridge as completely wasted, owing to the

⁸⁷ Morris, *Man and His Ancestors*, p. 87.

conservative, legendary teaching that avoids harming the vested interests of ecclesiasts.

Educating moral imbeciles gives them added power for evil. Increase of intelligence merely affords the honest and dishonest better means of asserting themselves. It does not, as history shows, create either more honesty or dishonesty, but in the clash between the two the finding of the line of least resistance may end in degeneracy or adjusting to the assumption that "honesty is the best policy," possibly ending in the habit of honesty being formed.

Darwin thought that a powerful animal would not have been so liable to be social and to that very fact of our ancestry lacking in strength may be due the higher mentality of man, as he had to substitute craft for power.

The social feeling is an extension of the parental or filial. Those individuals which took the greatest interest in society would best escape dangers while those who care least for their comrades and live solitary would perish in great numbers. So that mainly those who clung together would survive to create posterity like themselves, and only the few forms who were strong enough, like the lion, to live apart would similarly be permitted to live.

Social interchange of ideas develops intellect and the solitary must suffer deterioration in the forming of a community.

Transformations such as that of rapacious, selfish man into the altruistic, considerate and social man are paralleled by the feud between cats and dogs transmitted from vast ages back common to the great families of felidæ and canidæ, with rare examples here and there of individual cats and dogs tolerating each other or even becoming friends.

The cave men of Europe have left evidences of their having been a filthy lot, too ignorant, indifferent and lazy to remove accumulations from places where they lived. Much of this unclean animal nature survives in the Hindoos and even in the Spaniards. Under Spain everything offensive existed in Cuba, filth, fevers, murder, robbery, gambling, ecclesiasticism. When Havana was cleaned up by the Americans, under George Waring, Jr., whose valuable life was sacrificed in his work, yellow fever, malaria, smallpox, etc., disappeared. Murders ceased, robbery stopped,

and the Cubans did not recognize themselves, but the Cuban newspapers of 1902 complain of a sincere attempt of the Spaniards to revert to their former filthiness in many instances.

It often appears that many vile things are associated, such as strife, disease, etc., and that improvement in one direction often helps other matters to become better. Physical and moral cleanliness cohere often, and neighbors finding a better atmosphere are likely to imitate what is good. Filth breeds disease, neglected muck heaps bring flies, and they carry typhoid. Swamps afford mosquitoes and they spread malaria. So an ignorant, lazy community is likely to be a sickly one. The cleaning up of Santiago and Havana dropped the death rate and almost abolished yellow fever. The Spaniards appear to have brought all sorts of diseases to America, such as smallpox, syphilis, yellow fever and even malaria, for the natives claim that such things were unknown previous to Cortez' invasion.

In keeping with disease and cruelty among the Spaniards their ideas of "honor" are low. Two hundred Red Cross flags were hung out over ordinary houses in Santiago during the battle to keep the Americans from shooting into Spanish troops, while Spanish guerrillas fired on the American wounded even when the Red Cross flag was on the tent or ambulance. They stole the food from their citizens and sent them out of the city to be fed by the American troops. Gen. Blanco, the governor-general of Cuba, appropriated one hundred tons of Red Cross supplies sent by America to the reconcentrados and used the goods for his soldiers.

Spain cared nothing for its soldiers' lives. The officers robbed the privates of subsistence and then urged them to fight to the death. Officers never surrendered when they had food.

The Spanish naval officers were too gentlemanly to submit to drill or instruction and depended on what they called "common sense" and "practical ideas." The ordinary sailors of the United States were schooled and trained in complicated theories combined with target and other practice and the world saw the result.

The vast and sudden extension of the means of communicating and influencing opinion which the discovery of printing afforded did not long remain unnoticed. Few have temper and comprehensive views enough not to desire the prevention by force of

that which they reckon detrimental to truth and right. "Hermolaus Barbarus, in a letter to Merula, recommends that on account of the many trifling publications which took men off from reading the best authors nothing should be printed without the approbation of competent judges."³⁸ The same old spirit of censorship we find at every hand and in all ages even down to the present.

Books were burned by order of the university.³⁹ An incredible host of popular religious tracts poured forth in Europe with the opposition of churches and governments seeking to stem this freedom of a new means of thinking and speaking. Many were the attempts to tax, license and curtail book making. A bull of Alexander VI in 1501 reciting that many pernicious books had been printed in various parts of the world and especially in Cologne, Mentz, Treves and Magdeburg, forbids all printers to publish any books without the license of the archbishops or their officials.⁴⁰

England seems to have been nearly stationary in academical learning during the unpropitious reign of Henry VII. Italy was a century ahead of England in learning. In 1598 King Henry IV of France ate without forks in his palace. Spoons had been invented and knives were known, though for a couple of centuries the little pitchfork, fourchette, was used on special occasions and not as now used.

The hands were more carefully washed in those days before and after meals. The change from fingers to forks began to be made about the end of the sixteenth and beginning of the seventeenth centuries and much ridicule was heaped upon the innovation as over-luxurious. After the seventeenth century the use of forks spread from the aristocracy to humble circles of society. Its form underwent change from two straight prongs to the conveniently curved many-pronged fork of today.⁴¹

The steps from individual to national hunger appeasing are in the chase, the pastoral and farming life, seeking new fields because of overcrowding and the emigrations causing predatory habits, battles being between families of the same tribe, then with

³⁸ Beckman, Ch. III, p. 98.

³⁹ Chevillier, p. 302.

⁴⁰ Guden's Codex diplomaticus, Vol. IV.

⁴¹ J. von Falke, Ueber Land und Meer, 1889.

neighboring tribes, and these united to fight other tribes. The government developing from the family to the tribe and nation. Trade develops, capital enabling the spread of commerce and intercommunication uses at first rude boats and wagons, finally sailing and steam vessels and railways, telegraphs and ocean cables.

A street without sidewalks in a large city would seem queer to-day. We are so accustomed to them that one who builds a house would not think of leaving its front without a sidewalk. We accept sidewalks as the usual thing without expecting to charge passengers for walking over them. But long ago a builder would have laughed to scorn the idea that he was in any way obliged to put down smooth surfaces for the rabble to walk over. At this extreme we have the sidewalk constructed as a habit, at the other extreme the bare idea of one was nonsense.

Society sweeps its debris into tenements, alleys, jails, asylums, poorhouses and refuses to look at it, but surveying its cleaned streets and well-kept parks exclaims, "How beautiful the world is and how it advances."

The rich certainly need educating, for their distance from the poor puts them beyond sympathy for them, but if they can be induced to take interest in the remunerative modern methods of Mills in New York and Rowton of London in building model boarding houses for the poor they can pride themselves on their charity and make money at the same time, such a feeling as is pandered to by the giving of a charity ball. At first this improved tenement house plan was a charity, later it was ascertained to be a good investment and it was seen that decency and philanthropy would pay, when rightly managed.

We prefer to imagine that our own particular way of living is the proper and only one. Among some Nubian Arabs three days out of four the woman must be chaste, the fourth she may do as she pleases. During some religious festivals the bonds of marriage are released by common consent. The Dogut Indian is jealous and will beat his wife for an impropriety, but will lend her to a friend. Among the Eskimos a married person is husband or wife to all other married, but the single must remain such till married. Monogamy was the law among the ancient Romans

and descended to us by this pagan custom being fused with Christian observances.

Pericles stood above the multitude. His successors were obliged to adopt other methods to acquire influence; they took advantage not so much of the strong as the weak points in the character of the citizen and obtained popularity by flattering their inclinations and endeavoring to satisfy the cravings of their baser nature. The bravest men felt that the prospect of being called to account as to their campaigns by cowardly demagogues before a capricious multitude disturbed the straightforward joyousness of their activity and opposed obstacles to their successes. A demagogue then was simply an influential speaker of popular politics. Demosthenes was commonly distinguished as an orator, but Kleon is branded as a demagogue.

In Russia it is dangerous to be charitable on a large scale; the court fears education and lifting of the common people. The czar is really a mere figurehead, the nobles behind him are the refined brutes. It is interesting to trace the origin of their sleek, arrogant cruelty, such as the pretty buzzard or vulture displays.

A story entitled "The Sowers" describes the treatment in store for any nobleman who dares to endeavor uplifting the laboring classes.

When the Pennsylvania coal strike began the powerful, respectable mine owners cut off food from the miners' families; at the same time the striking miners refused to flood the mines as they might easily have done by calling out the pump men.

During the coal famine of 1903, caused by conspiracies between railways, dealers and mine operators to keep coal scarce to enable high prices, the City of Chicago adopted a temporary plan of selling coal at cost to the poor. This precedent might justify municipal control of all business whatsoever, but the dishonesty of the people and officials would bar such possibilities. Organizations to take foul advantage of such a system would at once arise. If systems can be arranged to prevent such dishonesty then the plan would succeed.

Indicating how a nobility or privileged class may be created from the ranks, Gerald Griffin remarks that when the country was

deserted by its gentry, a general promotion of one grade took place among those who remained at home. The farmers became gentlemen and the laborers farmers, the former assuming, together with the station and influence, the quick and honorable spirit, the love of pleasure and the feudal authority, which distinguished their aristocratic achetypes, while the humbler classes looked up to them for advice and assistance with the same feeling of respect and dependence which they once entertained for the actual proprietors of the soil.

The socialistic idea of to every one according to his needs, has to contend against who would be the best judge of those needs. The individual himself knows best what he needs, so both judgment and honesty are presupposed where they are not; and, needs being supplied, there is an end of effort.

Lord Bacon wrote that "Men in their innovations should follow the example of Time, which innovateth greatly, but quietly and by degrees scarce to be perceived." There are cataclysms also which make great innovations and sometimes the quiet kind have been the cause of the other sort. For instance, old errors may innovate new social diseases quietly until the whole fabric is threatened unless a revolution comes.

Macaulay⁴² remarks that the circumstances which have the most influence on the happiness of mankind, the changes of manners and morals, the transition of communities from poverty to wealth, from ignorance to knowledge, from ferocity to humanity, these are the noiseless revolutions, not of armies, senates, treaties or recorded in archives. They are carried on in every school, church, behind ten thousand counters and at ten thousand firesides. Nations may be miserable amidst victories and prosperous amidst defeats. We read of the fall of wise ministers and of the rise of profligate favorites; not a small proportion of good or evil is effected by a single statesman as compared to the good or evil of a great social system.

Buckle claimed that reforms were often attempted prematurely by well-meaning fools, and what might have taken place

⁴² History Essays, Vo.. I.

naturally, evolved, worked out, has thus been set back many years. Narrow reform ideas have often impeded real reforms.

Wealth has not accomplished everything in the world. Much has been done by penniless fanatics working upon the hopes and fears of the multitude.

Ample funds do not guarantee advance in anything, for the money attracts greedy superficial pretenders and may become the means of opposing the aims for which the funds were appropriated. Rome has had gold poured in upon it so fast it could not be counted. What has been the result? The smaller, poorer colleges do better work than the heavily endowed ones. A vast research fund will inevitably fall into the hands of strugglers for it rather than those who could use it to the best advantage. Those selected for aid in research will be such as have influence, and these will spend their time in arrogantly imposing crude ideas and fighting unofficial meritorious ones. Just as official science has proven to be a curse. Frank S. Billings, of Sharon, Mass., had his hog cholera investigations stolen by official biologists, and they abused him for making good his claims.

Improvement and reform is more often an incident than an intended result of progress. Often the improvement is in spite of its originators' intentions. As when newspapers attack wrongs to seek gain for themselves and are as apt to attack the right for the same reason.

A priesthood may be so exempt from corruption through favoring circumstances, such as coming under the control of an up-right bishop, as to have a majority of good, sincere, devout men, but we must admit that under unfavorable circumstances it is possible for the majority to be bad, as where an unprincipled head of the priesthood gathers his own kind about him and opposes the conscientious. "To do good we must know how to do it, and, like everything else we can only know this through the medium of our own passions, our own judgment, our own ideas, which not infrequently are rather as correct as they are capable of being, than as they ought to be."⁴³

By a rough estimate a billion and a half of people are at pres-

⁴³ Manzoni, *op. cit.*, Ch. XXV.

ent on the globe, of whom about 75 per cent live like beasts and only ten per cent are fairly civilized, with but one per cent living in anything like comfort and enlightenment, and all of them are contending with one another for existence to a greater or less extent.

The utter absence of any kind of a government is common among Asiatics, a sort of survival of the solitary or family, patriarchal rule, where there has been failure to form tribes or where once formed has degenerated into the single family control again. Reclus (*Asia*, p. 222, Vol. 1) describes the Turkoman absence of government. Such people are practically but little better than apes, they may imbibe a few ideas from neighboring nations, but are unskilled, revengeful and simple, like American savages, or even lower, for these Indians have advanced to the forming of tribes. This is the blissful state to which anarchy seeks to hand us. But many of these anarchists are insane, as was Louis Lingg, who, condemned to death in Chicago for the Haymarket rioting, succeeded in killing himself before the time set for execution. Others of this belief are half-educated fanatics, some of whom mean well but are misdirected in their energies and ideas. The various leagues to protect commerce, such as the Rhine and Hans-eatic, or for mutual defense, as in Greece, the kingly, free state, oligarchy, or republic when simplified mean shall one rule, two or three, or shall certain parts of the populace rule, and who is to represent them. There is usually the greatest reluctance to letting everybody rule, even by representation. But even when everybody is supposed to be represented it means that nobody is represented but the demagogue who steals the power.

Some steps toward social advance may be seen in the oscillations of the old-age pension legislation in various countries. In 1896 a royal commission in England reported that old-age pensions were impracticable, and no very great effort has been made to make them otherwise. Half a million persons at an expense of three million pounds per annum is too vast a scheme, but there are ready billions for vice cheerfully.

In 1899 an old-age pension act was added to the radical legislation of New Zealand and in New South Wales in 1900.

Simultaneously with such humanity to the aged comes the statistical announcement that there is a lengthened average of human life.⁴⁴

The initiative and referendum, by means of which the people may directly institute and ratify or disapprove of legislation and thus escape being misrepresented, has been long in use in Switzerland, and Larned gives its practical workings there to 1894 and 1898. In Minnesota the referendum was brought into practical use in 1896 and this indicates a gradual but sure extension universally of like measures of evolved socialism and better government. In 1898 the constitution of South Dakota was amended by the introduction of the initiative and referendum. In Chicago in 1891 an overwhelming popular vote was cast in favor of the referendum and municipal ownership.

Much advance in sociology lies in the perfection of mechanism, using the word perfection in a relative sense, as mechanism and its management requires a higher knowledge of nature. Mankind grows more skilled and thoughtful with all that is entailed by being compelled to study machinery based upon laws of physics and chemistry, for these latter laws must be to some extent understood by all who make their living by the use of machinery. A new classification of intelligence is dawning in the mechanical world which will be rated higher than the mere ownership of wealth which is already recognized as often associated with low mental qualities. Finally mechanical knowledge will create wealth and power. When it becomes necessary to have a certain amount of scientific information to secure a position that species of knowledge acts as a stimulant to intelligence, and soon we have a class that prides itself on having that knowledge and being skilled in certain lines, and soon from the ranks of such classes step up advanced thinkers. Necessity impels some inventors to rack their brains for new and labor-saving apparatus. Necessity may evolve a means of protecting the inventor's rights to his invention.

Old dwellers in New Orleans remember the abominable old volunteer fire engine company system conducted by thieves, rowdies, brawlers, and yet tolerated as better than nothing. It gave

⁴⁴ Larned History, Vol. VI, p. 342, for details of advances.

way to the present mechanical steam engine after much opposition and bloodshed.

Ultimately all kinds of refuse will be bought from houses. Now it is thrown out and enables politicians to collect pay for pretending to cart it away. In New York the privilege of sorting garbage was sold and nets the city an income. People are likely, when well enough organized, to make money out of what they now throw away, as coal tar products are made from gashouse refuse.

From the heterogeneous to the homogeneous in all things promises a social system to grow out of the multitude of attempts and failures and partial successes in sociological co-operation. No one can foresee how or when they may be united any more than the savage Teutons foresaw their feudal system, or realized that it would grow by the grabs of grabbers into national unity and that there would be a world-uniting commerce on the basis of adjustment of mutual grabs, becoming more refined, from open piracy to courteous swindling in trade. The rules of the game set for the time must be observed and new methods of swindling supplant the old, which custom has outgrown. An old speculating trip for a sailing vessel in trade was an "adventure," and losses were as apt to be made as gains; finally trade developed in settled ways and routes and a greater assurance of profits followed.

There were misgivings as to what would be the effect of constitutional provisions for militia and federal arsenals, but these fears proved to be unfounded. Contingencies cannot always be foreseen in regard to what does and what does not menace liberty. But it is thoroughly agreed that large standing armies destroy liberty, and it is asserted that large navies do not. They, however, are liable to promote naval rings who seek to control soft places and oppose single-hearted merit because envious of it. Positions obtainable by intrigue attract designing persons who, being wholly intent upon hanging on to a high salary, are not likely to possess other abilities, but are more than likely to venomously resent any patriot attracting deserved attention, because the intriguers are liable to suffer eclipse, so they band together to destroy whoever has earned positions instead of securing them through influence.

The warrior instinct is wonderfully deep in mankind and is

readily cultivated when needed, hence America does not need a large standing army. Most men are soldiers by nature and readily take to army training, as was shown in the civil war. During peace times football games afford excuses to kick one another to pieces. The military spirit born of savage instincts latent in all renders civilization skin deep. The people without a large standing army conserves its strength by favoring productiveness. A standing army eats the vitals of natural growth, and is ripe for the coup d'etat that develops Boulangers and Marchands, whose fate has differed from Napoleon's simply because the French people have grown a little more enlightened. The isolation and industrialism of America has saved it from the kind of demagogues who destroyed Greece and many a European government.

The fight for good over evil is a hard one and all the more so from Huxley's standpoint that "Ethical nature, though born of cosmical nature, is necessarily at enmity with its parent." In plain words, the desire to do good is a natural evolution from the selfish old past, and this inherent selfishness contends against every step taken to benefit the race directly.

There are different kinds of good, and Spencer makes an elaborate definition of its constituents, but, however originated, the desire to do good exists everywhere. The surest form is in the desire to do good to one's self, but after all that is the colonial good, the general benefit sought to the aggregation of units composing one's self, and the highest is the "secondary ego," which substitutes the general for the personal good.

Methods and ideas differ infinitely and two ideas may clash while each was intent upon its theory of how the good should be accomplished. It is further complicated by hypocrisy turning to account the secondary ego of others, selfishness profiting by generosity.

Spencer notes that "there has to be a continually changing compromise between force and right, during which force decreases step by step as right increases step by step and during which every step brings some temporary evil along with its ultimate good." Buckle shows that the laws of morality may be unchanged for ages, but knowledge sets us free and gives us the genuine article.

CHAPTER XIX.

ANALOGY.

A glance at such matters as heredity, habits, and general physiological functions suffices to discover the parallelisms, resemblances, if not identities in modes of operation of living things, and as houses made of bricks have much of the brick properties as one made of wood is liable to burn, so nations behave as the individuals composing them, for the most part allowing a certain portion of the body to control that assumes to be acting in the interests of all parts, but it is not doing so any more than the sovereign cares for his people in reality.

In other chapters we have passed from atoms to animals and plants, and in *Natural Analogies*¹ an extended argument is ventured to the effect that a social organism depends upon its telegraph, railway, steamship, manufacturing and mercantile systems, each intent upon its own gain, but incidentally working together for the common benefit, just as the different organs of the body do. In a general way we may say that sociologically the merchants, bankers and brokers are intestines and do not eat up everything passing into their custody solely because they cannot do so. Common carriers may be blood vessels and lymphatics, laborers and soldiers the muscle cells. Rulers merely correlate the visceral workings, and so legislators, kings, etc., correspond to the sympathetic nervous system; the real rulers are those who influence the community more than do the supposed rulers.

Plato's model republic was founded upon vague correspondences between mental and social divisions, and Hobbe pictured the state as a monster Leviathan. Herbert Spencer used his vast biological knowledge to show close resemblances between the activities of society and that of cells. He holds that England

¹ *American Naturalist*, March, 1892.

would correspond to a much lower vertebrate form than the human.

There are parallels of congestion and anemia in trade. Industries may die for want of supply. The co-operation of cells and laborers is in the interest of the colony. If one cell or organ attempts overgrowth it is malignant and kills itself in the end by parasitic destruction like that of the dodder. The boodler politician is a cancer in this sense. Some nations deliberately place an arrested development monstrosity, as a cruel imbecile, on their thrones.

The social like the individual organism is in constant danger of a part usurping functions greedily and destroying the entire colony in its selfishness. The fine brain is the highest and the weakest, the first to succumb to disease and last to be developed. So the highest good of a community is similarly difficult to foster and maintain.

Metschnikoff likened inflammation to a warfare between micro-organisms and leucocytes. The news of the arrival of an enemy is telegraphed to headquarters by the vaso-motor nerves and the blood vessels are used as an avenue of communication with the threatened region. When the invaders are established they live on the host and scatter injurious substances which they form. The active leucocytes attack and try to eat the micro-organisms, and some may die in the fight and form pus and an abscess. Defeat of the leucocytes means sickness or death, victory means recovery. In our bodies there is a standing army of movable cells quickly concentrated to attack any foreign foe which may appear.

Agrippa Menenius, B. C. 494, used the comparison of the organs of a body revolting against one another with resulting suffering to all to quiet a multitude on the point of outbreak.

Max Müller says this fable is of very great antiquity, and it is found among the Hindoos.

It is not the volume but the activity of money that counts. It is the same with blood, anæmia compensated by quickened heart action. A parallel exists in lessened circulation, both causes increasing activity. Why? Hunger, the greater molecular attraction, in the absence of surfeit.

From the fact that the brain uses up more blood than any other organ it may be inferred that when a social organism becomes comparable to a monkey stage of development there may be more expended in thought than in gluttony.

Blood vessel vaso-motors that regulate the blood supply are the telephones and telegraphs of mercantile life. In primitive animals the blood does not go always where it is wanted except by accident, just as the old sailing vessels went out on "adventures," and might meet with good exchange or bring their cargoes back. There was no directing apparatus, no means of communication to tell the congested or producing points where trade would be good, where articles were wanted. In higher forms the goods are swiftly transported on being telegraphed for, or where regular demand has been instituted. A vaso-motor system acquaints the blood vessel with the nature of the demand, whether much or little is wanted, near or far.

The separation of tribes by parting or by bloodshed and grouping about a new chief is comparable to the amoeboid splitting and the new nucleus formation; also there is a resemblance to parturition by disruption, with suffering and loss of blood.

Tramps may be likened to wandering leucocytes that are wounded and imperfect, and there may be organs for them such as the spleen in which they are colonized and renovated.

Dr. Daniel G. Brinton is quoted as treating the nation as an organism like the human body, and discussed such diseases as render it incapable of self-preservation. "That according to history the average life of a nation was from 800 to 1,000 years, its disintegration for the most part being due to moral disease, as corrupt government, or priesthood, though nations do not fail from psychologic cause." The etiology of the diseases of nations he thought due to imperfect nutrition, poisons, mental coma, and sexual aberrations, each one of which received due consideration from the speaker; reviewing the causation factors in the health and welfare of this country, Dr. Brinton believes that our mode of life, use of stimulants and drugs might have some tendency toward mental coma.

Buckle, in addition to noting that we expect men to be governed in their acts by the state of the society in which they occur,

says that the entire moral conduct is likewise routinized. Notwithstanding the many incentives the crime of murder occurs with as much regularity as the tides and seasons. Quetelet notes that yearly the same number of murders occur and similar instruments are employed in the murder. The same number and kinds of crime were yearly committed in France between 1826 and 1844, and presumably since, in proportion to the population. Suicide statistics indicate that in a given state of society a certain number of persons must put an end to their own existence. Even the average of marriages in England bear a definite relation to the price of breadstuffs and vary with the average earnings of the masses. Memory defects appear to be capable of prediction, for yearly the same number of letters are mailed without direction.

Blackstone dates the time of memory for England from the reign of Richard I, as we date that of individuals about the fifth year. The first race consciousness could be located in India and Persia, for thence came the earliest records we possess.

Hume says: "All our reasonings concerning matters of fact are founded on a species of analogy which leads us to expect from any cause the same events which we have observed to result from similar causes."

Spencer² speaks of society as an organism made up upon lines comparable to those of the parts of an animal. Hobbes rudely likened nations and mankind to a Leviathan with his crude attempts to describe the functions and parts of his analogy, but there was not sufficient knowledge of biology in his times to enable him to see what would have surprised him in the correctness of his general idea and the faultiness of his use of it. The wandering amoeba may be likened to the nomad, the synamoeba to the family, the aggregation of cells from a mother cell, differentiation gives in the gastrula forms a resemblance to tribal control; then come the nerves and sense organs comparable to telegraph lines and sentinels; the blood vessels afford special routes for conveyance of nutrition, as better roads through countries. Spencer thinks that even the highest nation is yet lower than the

² Principles of Sociology, Vol. I, p. 472.

lowest vertebrate in comparing biological with governmental control.

The law of distribution for valves in the veins I announced in 1881, in the *American Naturalist*, as alike for quadrupeds and man, showing that man was originally a four-footed animal, as, in common with other quadrupeds, when on his hands and feet his perpendicular veins are valved, and his horizontal veins are not valved. So this marked analogy is homology, identity, and Professor Frederick Starr and others mention it as a strong proof of evolution.

Tissues work by stirs. A quiet leader is displaced by an active one, even though he may not be as good. People do not realize when they are well off. Change must occur to notify them of anything, change is necessary to feeling. Regularity, monotony, is practically death. Consciousness requires activity to a changed degree from the usual. The female is attracted by differences from the ordinary, as tissues demand a change. A stir is craved by the populace. Excitement, circuses, anything, rather than being bored with monotony. People are proud of those who make a stir. Within limits changes are needed to maintain life; but the lower the scale of existence there are extremes of either great routine or great changes.

Overhead electric wires are replaced by underground ones, and gradually tunnels gather and group the different services. This closely resembles the evolution of the spinal cord, which gathers the nerves out of the way into more direct bundles protected by the vertebrae, and the blood vessels replace the less definite method of nourishing the tissues as by lacunæ instead of tubes in some of the invertebrates. Obsolescing organs are sometimes converted to other uses, as when the swimming bladder becomes a lung, and in tearing down wires they may be used for fences, or a telegraph line may be used for telephoning.

A plant may be extravagant in flower production, its life is like that of the animal, a constant adjustment to surroundings. Plants like and dislike light or shade, swamps or deserts, heat or cold. Plants are colonies of vegetable cells, breathing, eating, growing, excreting; the sap is the blood. Plants develop organs for defence or to assist its life struggle. The dodders are mur-

derers and robbers of other plants, living upon them and sapping their lives. Insectivorous plants may suffer from indigestion. Plants have diseases such as fungi, smut, ergot, rust, on potatoes, corn, lilies, rye, hops, wheat, grapes. Mimicry is resorted to by some plants for protective purposes or to entice insects. Vegetation is social or solitary, plants sleep and awake, are parasites or mutualists, enter into partnership, co-operate and divide labor, are subject to the influence of heredity, habits and surrounding.

Seed and pollen meet by chance. In higher animal life the deliberate union occurs. Adventure, chance, was the early voyage method for ships; now there is planning of the destination with surer results.

J. A. Thompson³ describes the inter-relations of plants and animals, their dependence upon surroundings, the struggle for life, their armor and weapons, the cruelty of the struggle, their shifts for a living, insulation, concealment, parasitism, rapid change of color, protective resemblances, warning colors, mimicry, masking, combination of advantageous qualities; their surrender of parts to save themselves; their social life, partnerships, co-operation and division of labor; their gregarious life and combined action; their domestic life, love of mates, love and care of offspring; their industries, hunting, shepherding, storing and making of homes.

Trees of a special variety indicate soil of a certain kind, for instance, pines are found in rocky or gravel soil, beeches in a chalky soil, elms in rich, damp soil, oaks, ashes in heavy clay soil, willows and poplars in marshy soil; just as certain animals thrive best under certain surroundings and the community of animals of all kinds with man is seen in man being liable to receive from the lower animals, and to communicate to them, certain diseases, as variola, the glanders, hydrophobia, etc. Man has internal and external parasites, as do other animals, and wounds are repaired by the same process of healing.

Monkeys are born in almost a helpless condition as our own infants, and often the young and adults differ as much. The *Cebus azaræ* is liable to catarrh, monkeys suffer from apo-

³ Study of Animal Life, 1896.

plexy, inflammation of the bowels and cataract in the eye. The younger ones, in shedding their milk teeth, often died of fever. Many kinds of monkeys are fond of tea, coffee, liquors and tobacco.

C. J. Cornish⁴ describes the beds of animals, their sleep, toilettes, society, dislike of solitude, etiquette, military tactics, courage, sense of humor, emotion of grief, their playing, pageants, industries, sicknesses, *materia medica*, migrations, etc.

The physics of intensity decreasing as the square of distance or time, is seen in gratitude to the physician great at first, disappearing ordinarily with recovery, and a strong impression strengthening will power, sufficing to keep a drunkard sober till the influence passes, also in the fading of resolutions.

The adjustment of fibres to least resistant lines enables the easiest and best work to be secured by minds, by bodies, and by materials; for instance, Stradivarius made his violins of old choir-stalls from an Italian church. It may be that with the ripening through ozone, etc., as wines do, and the added constant subjection to musical vibrations the wood of these box stalls acquired special resonance from the playing of string and wind instruments, through the centuries, near the wood from which the violins were made.

Animals are comparable to machines in converting vegetables into animal products of greater value, such as meat, milk, wool, muscular power from raw materials derived from the soil.⁵

Many mechanical principles are applicable to life, not only physically but mentally. Hoppe-Seyler's theory of albumen in a hydrated medium is equivalent to the need of water in joints, respiration, the circulation and universally.

The parallelogram of forces may be made to illustrate that will power consists in the resultant of impelling desires and impulses. Conduct can be analyzed mathematically if all the components are known. Action and reaction of mental states, emotions and feelings are always equal and opposite, allowing also for friction. When in a burst of emotionalism one throws his

⁴ *Animals at Work and Play*, 1896.

⁵ M. Miles, *American Naturalist*, July, 1894.

purse on a stage or altar he is apt to upbraid himself later.

The correlation of vital and physical forces has been amply written upon by Joule, LeConte, Grove, and others.

There is an incessant compromise everywhere in nature, the line of least resistance, the parallelogram of forces, the evolution of human conduct. "We do the best we can," remarked Principal Dawson of McGill University to me when I asked him how he could oppose Darwinism with his able intellect.

The hydrostatics and hydrodynamics of the circulation are apparent throughout physiology. The weak heart may stop beating by lying on the right side, the anæmic person suffers from headaches, bad eye sight and confusion of thoughts when standing up, but the reclining position relieves these states.

When you live long in one place and speak of another town in which you formerly resided you will find yourself, upon going to a third location, speaking the name of the first when you mean to refer to the one you just left. The reason for this is brain inertia, the tendency to maintain the feeling of established relations to locations.

The duration of effects of stimuli is an evidence of inertia, varying with persons, and the reaction to stimuli also varies with persons.

There are such things as the overcoming of inertia and the acceleration of momentum in human thought and in sociological projects, and the mind is subject to the laws which create inertia.

Discontent, dissatisfaction, atomic tension, molecular instability seeking other or higher combinations. The fading of friendship which in youth is supposed to be perpetual is like the nascent molecules and the worn-out compound ready to disintegrate.

Desire is continuous and insatiable because when an atomic combination is formed the new molecule has new affinities and seeks new combinations, so through life content is rare, and it is the rule for one want satisfied to be followed by even more imperative wants, as Daniel Drew stated, "the millionaire is never satisfied till he has half-a-million more."

The two hydrogen atoms can be likened to the quantitative part of the union with oxygen, which is a qualitative atom in

forming the water molecule. That is, hydrogen is simpler, and forms the bulk, while oxygen is more active, and these two elements represent the germ and sperm cells, and the H_2O formation resembles the fecundation. This likeness may be carried both ways to indicate the woman as a molecule for the infantile nourishment and the male as the more active and higher differentiated molecule, the union between which results in another application of Spencer's integration of the heterogeneous to form the homogeneous; if the derivation of oxygen primarily was from hydrogen, by changed conditions of the latter, a more active atom was thus evolved.

Nitrogen always tending to escape and oxygen always tending to unite, constitute vital phenomena.

Man is undeniably a chemical compound, an association of organic and inorganic molecules, and integrated into a complex which may be called also a molecule. His symmetry is analogous to that of crystals.

Lester F. Ward⁶ holds that chemical elements have evolved from simpler constituents in much the same manner as the inorganic compounds are formed. These latter form the continuation of a uniform process of evolution varied in its character only by the conditions of temperature affecting the globe at the period when these substances were respectively formed upon it, and the organic compounds are prolongation of this law under the greatly lowered temperatures of the earth's crust after its formation. The production of aggregates of higher orders of complexity through the recompounding of units of lower degrees of simplicity. Throughout the scale the molecules constituting each progressively prove complex unit, exhibit increase of mass, with decrease of stability.

Helen C. De S. Abbott has an interesting paper on the comparative chemistry of higher and lower plants,⁷ wherein she takes the ground that as the evolutionary doctrine has shed so much light upon biology it will also enlighten us concerning the evolution of chemicals into plants and other organic life.

⁶ American Naturalist, Dec., 1882.

⁷ American Naturalist, Aug. and Sept., 1887.

Felix Le Dantec,⁸ in his résumé et conclusions, says:

To establish the parallelism between physiological and psychological activities we have unique points: That atoms have consciousness fixed and unchanged in a determined space. This consciousness continues through the molecules to the plastic substances into the superior condition of the nervous system. He derives from this the conclusion that psychic studies are useless that ignore these material conceptions, as they will not lead to the truth.

Cells act as selfishly as their owners and the analogies of nature ally the egoism of man and animals to the chemical affinities upon which it depends. The cause of the selfishness of all animated nature lies in the chemical affinities from which, step by step, that selfishness was derived, and remains scarcely changed. The CHNO and other added atoms being together through their mutual grasp, and in this blind grasp of atoms they take from their surroundings that for which they have affinity. Cells mutually adhere for the same reason, and so do social organisms, civilized man, society and nations.

One very common fallacy is that eventually man will live on concentrated chemical food when a glance at his make-up would show that millions of years would be required to produce a much less radical change in his feeding methods. The cooking of food makes his teeth imperfect and his digestion less hardy, but a great amount of debris is needed for intestinal activity, just as the chicken must have gravel.

We have chemical ingesta in whisky, opium, morphine, etc., and it debases rather than nourishes, though it may temporarily act as a food. We have chemicals that are used as or with foods, but their effects are either undesirable or negative.

Patent medicine gulpers are chemical eaters, and they do not thrive.

Contemplating the meat eating, fruit eating and vegetable eating teeth and digestive apparatus of man, he is not likely to be anything but an omnivore for ages to come, possibly then he may eat less meat or none at all, but chemicals, never.

⁸ Le Déterminisme Biologique et la Personalité Conscienté, Paris, 1897.

There is no absolute from which and to which we can refer everything. Things are lighter, warmer, farther than other things, but there is no gas so light, no heat so great, no distance so far but that there may be lighter, hotter, farther things conceived by the mind.

The earth stands still to us, but moves with reference to the sun, and while the sun is stationary to its planets both sun and planets move about a remote central sun.

Trains side by side going at the same speed are stationary with relation to each other. If one passes the other the one passed relatively goes backward to the one that passes it.

Up is down to opposite peoples on the globe, and both are relatively right and wrong at the same time in claiming to have their heads up. Any mode of life adjusted to any surroundings, any odors, however strong, any color of light, may become accepted as the normal one. You may live in a grist mill, or near a boiler factory, and sleep quietly till the machinery stops. A countryman finds city noises intolerable, as the city man cannot endure the death-like quiet of the country.

If you ascend an inclined plane the houses seem out of perpendicular. A false perspective is created by architects in some small churches in Italy to give the appearance of the choir being far off by shortening the pillars at the end of the church. The Parthenon and St. Peter's are constructed with regard to relative parts and distances to produce perspective effects.

We judge by comparisons, a relative matter. Heights are relative to the eye. Something must be a means of measurement, and to enable any idea of sizes in a picture something must be introduced to enable relative comparison to be made, a man or animal, otherwise a hill might appear like a mountain or a lake like a small pond.

Getting "turned around" is due to failure to notice the turns in your voyage, and regarding the relation of the two places the starting point and destination with reference to an error in your course.

Purgatory is mentioned as paradise to those in hell, and hell to those in paradise.

When little things annoy us it is because there are no big things to bother us. When a real calamity occurs it obliterates the little annoyances.

A man with a vast income in California drowned himself when his losses reduced him to the necessity of living on \$50,000 a year. A tramp would be overjoyed to find a ten-dollar bill. A long litigation resulted in \$30,000 being given to a plaintiff with heart disease who expired from the excitement. Reaction from excitement can produce apathy. The refugees from Martinique who escaped the Pelee volcano and lost their families were so dazed that they spoke to the people of Fort de France as though the eruption and its effects were indifferent matters.

A great fuss was made over the loss of the first American in the war with Spain, and later the news of hundreds dying in Cuba and the Philippines attracted little general attention.

Hippocrates said a severe pain would dull the lesser pain. Martyrs in their ecstasy have appeared to be insensible to torture.

Morality seems relative, for a mother will lie to save her son's credit, and one deceives to befriend a loved one. Some millionaire socialists have advanced ideas, but the size of their wealth influences their sociological notions. A millionaire spoke before a New York legislative committee about taxing such men as Vanderbilt out of existence. Another who had ten million dollars thought that sum was moderate, but all over that amount was wrong, and that Vanderbilt should be hung for retaining so much.

Wundt brought Weber's or Fechner's law of the increase of stimulus required to produce sensation under the head of relativity, as instancing that our sensibility is of differences and is not absolute.

We regard a room as darker than it is on coming into it from the light, and emerging from the darkness a strong light may blind for a while, as too much suddenly presented knowledge may bewilder. Feeling is so relative that our sorrows lessen if we find greater sufferers than ourselves unless sympathy is blunted. Over-stimulation of the senses may cause subsequent disgust. Disciplining desires prolongs comfort.

Armored animals were many in ancient geological periods,

such as ganiods and the armadillo. Men abandoned armor when speed and skill made it useless. Skilled smaller unprotected animals killed off the armored knights of animal life.

When Chicago was a small place of 300,000 there was a character to it which it lost in its subsequent two million of population. Boston, with half a million, preserved much of its original thinking ability, but its expansion threatens to make it as mushy, heartless and commercial as Chicago. These places may pass through the assimilating stages as Europe did in the middle ages and emerge with something resembling a sociological brain.

Till a time is ripe events may not occur. In chemistry certain molecular arrangements are possible only when a definite grouping of atoms has been reached. So with the spermatozoon depending upon the ripening of the ovum. The child cannot think like the man. And the masses have to be brought to a point of development before ideas for their welfare are possible with them.

Low organisms whose few cells were nearly alike in function may be compared to a savage tribe. The barbarous or absolute monarchy, the oligarchy or boss rule of America is equivalent to a majority of the cells having no nervous system contact. An ideal republic would be such form as had all its cells in touch with its brain, which while it rules the body should get its power to do so from the body. No government is a republic till it has the initiative and referendum.

The centralizing steps are inevitable; in an ascending scale of animal life we find the lower centers constantly passing under control of the higher to more intelligently correlate the body. Trusts are thus evolutionary outcomes, however much misery they may create at first; they centralize for their own greedy ends, but the independent organs now become controlled in the interests of their master.

When in a certain line of reptiles a tail drops off, as with the frog, then higher development is unusual, but the tailed batrachia may go on developing. That is, when a people become civilized the next step seems to be degeneracy. As the Cossacks have all the potencies for future development and are really nomads, metaphorically they are still tailed, and may grow into the

future high race. The death rate for various reasons increases faster than the birth rate with civilization, mainly due to prevention of increase, so that the future nations are to come from the progeny of the neglected lower classes of today who are prolific enough to promise to inherit the earth hereafter, and in turn they will be overcivilized, decay and be supplemented by others whom they will look down upon socially.

Spencer's instability of the homogeneous and reintegration of the heterogeneous predicts the settlement of Africa, China and South America by the various Aryan branches, as German, French, English, Russian, forming new nations "in endless disintegrations and reintegrations."

CHAPTER XX.

CONCLUSION.

The preceding chapters have been arranged with regard to the modern pedagogic principle that the logical grouping is not usually the best one for ready comprehension of a subject. Further, it was kept in view that all knowledge is relative, that a person may be well versed in one special branch and be woefully ignorant in other respects. It is impossible to cover all fields of learning, though the bane of many philosophical writings is an air of arrogant assumption. And even though one after another many fields may be traversed we cannot avoid growing rusty in details though much generalizing power may remain.

Max Muller¹ suggests that where academic co-operation is impossible the next best thing is that a scholar eminent in his own department, and who knows what sound learning means, should for once step boldly out of his own domain, and take an independent survey of the preserves of his neighbors. There is, no doubt, considerable risk to the bold adventurer. He is sure to be called an interloper, an ignoramus, a mere dilettante; but whatever accidents he meets with himself, the subject is sure to be benefited. It has often been said that a traveler who spends a few days in a country observes things which never strike the residents, and it is quite intelligible that a man who once knows what it is to know anything thoroughly, should in surveying a new field see things which from being too familiar, have failed to arouse the attention of the ordinary student.

We have glanced at the contracting earth thrusting mountain ranges as wrinkles in its surface above a hot sea, and at the appearance of plant and animal life changing, developing or retrograding, availing of favoring circumstances to survive or through unfavorable conditions perishing. The laws of survival or degen-

¹ Prehistoric Antiquities of the Indo-Europeans, *Cosmopolis*, Sept. 1896.

eracy being applicable to all living things, whether plant, animal or man. We have visited in imagination the ranges where separate groups of men-like apes and speechless ape-like men have evolved from lower quadrupedal forms. We can conceive of the high Pamir plateaux surrounded by glacier peaks affording climatic and other conditions favorable to a superior Asiatic race the Aryans who, with the Semites, similarly originated to the South in the Persian Highlands spread over and dominated the earth and all other races. A pure race can hardly be said to exist with the facilities for mixture in all ages, whether historic or prehistoric. The preponderance of evidence being that in the north of Europe and Asia the Aryans have a Semitic strain, while to the south the Semites have been more or less mixed with Aryans. Races, such as the Egyptians, did not preserve enough of the Aryan or Semite inheritance to survive as races; they have reverted like the yellow dog to jackal ancestry.

The middle ages in Europe teach us how man in some cases struggled up out of bestial ignorance and slavery, against the opposition of his own kind who profited by herding their fellows as swine or sheep. We see in Russia today this abject submission of herds of animal men and in Turkey the sultan's anxiety to keep his subjects in total ignorance. In Europe the same old clutch upon brains and purses has been practiced by church and state, with here and there hysterical attempts at freedom. America probably has achieved the highest point of intellectual emancipation, but the same old greed, hypocrisy and cunning is at work trying to stem the current of advance, trying to degrade public service, public instruction, not merely through malevolence and mistaken zeal but because there is money to be made by organizing to rob and enslave, and no money to be made but much to be lost by opposing cruelty and oppression. Vested interests are sure to be encountered where brutalities are antagonized. Preachers "cannot afford" to denounce the modern piracy among the merchants of their congregation. They are safer among the platitudes they are paid to preach. Reforms, if they come at all, must come naturally, and through differentiation and development of intellect usually bent upon gain. The thief has to pay so

much for police protection that he concludes to become honest, as it no longer pays to be otherwise, and he finds that the time has arrived when "honesty is the best policy." And much of the real advance of the world, commercially, especially, has been along just such lines. Habit and heredity finally establish types and in the artizan and other classes we find characters who are organically upright, as far as their intelligence permits. But dissolution, or the falling away of superstructural circumstances, reveal whether this uprightness is solidly based or not. Changed conditions constantly surprise us by what they strip away from character.

Since there is evolution at all it is a common supposition that all things evolve; that is grow better, improve. The facts are that few things comparatively are temporarily exempt from retrograde development. The bulk of mankind is still savage, ignorant and, of course, superstitious. Even in so-called civilized society, the clothing and customs with an imitative ability, such as the chimpanzee has when he uses knife and fork, constitute the covering of savagery. A war, a pestilence, conflagration, politics, being placed in charge of the sick insane and paupers with the public funds for their care determine how much of the brute and how much of the higher type of man there may be present. And when an unsophisticated but honest reformer appeals to the public heart and conscience to make things better and is laughed at by this same public, which really enjoys the discomfiture of the fool for being a Don Quixote, he then comes to realize that maybe he was born too soon. Balzac's father pointed to the crucifix as the fate of reformers. Even though doctrines, such as are accredited to Buddha, Christ and Mohammed may be accepted, they become perverted in time by the money getters, the priestly exploiters, and the Greek church in Russia is not alone in this perversion.

As to a coming social revolution that will make all men brothers, the race is altogether too heterogeneous to admit of more than a few attaining the highest intellectual development that such an ideal state would imply. And it is likely that these few will be scattered, as they always have been, among the masses, their la-

bors unappreciated when alive, but remaining more or less effective after their deaths. All to what end? *Quien sabe!* The philosopher watches the game as a spectator, and regrets that he is forced to participate in it. He dares to think and to express his thoughts, but must keep out of the way of those who try to kill off reason with the clubs of assertion and authority in the interests of enslavers of body and mind.

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